



Niagara® 2120 User Guide

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Niagara 2120

Preface

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ViewCast USA Support

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For complete warranty details, refer to the specific warranty included with each product. General warranty information includes the following:

Limited Warranty

ViewCast warrants its hardware products against
defects in material and workmanship under normal use

for the period of one year (12 months) from date of sale. Where specific warranties exist that provide more substantial coverage, notwithstanding the warranty provisions herein, such product warranties control and preempt or supersede the warranty provisions herein.

Reseller Pass Through of
Standard Limited Warranties

Resellers pass the ViewCast standard limited warranties for the products through to the customer without modification. Any modification of a product voids the ViewCast warranties or any other existing or available warranty.

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About This Guide

Thank you for purchasing the ViewCast Niagara 2120 streaming media appliance. This user guide provides step-by-step instructions for installing and using your new streaming media appliance. For the latest ViewCast product information and news, visit our Web site at www.viewcast.com.

Product Description

The ViewCast Niagara 2120 streaming media appliance is a low-cost, easy-to-use, streaming media appliance that supports H.264 streaming via the Adobe® Flash® Platform.

The Niagara 2120 is built on the legendary quality of ViewCast Osprey® video capture card technology, which means you can count on the same highly reliable performance demanded by others who use ViewCast technology, including the world's leading broadcasters and content delivery networks.

The built-in Web interface of the Niagara 2120 simplifies system set-up and operation, allowing complete system control from anywhere on the network. All you need to do is have a Flash Media Server or CDN and set your streaming parameters from the intuitive Web interface and you can begin streaming. The ViewCast SimulStream® driver enhancement software technology comes standard with the Niagara 2120, which means you can stream in multiple, simultaneous resolutions, and bit rates to computers, cell phones, and mobile devices anywhere around the world. ViewCast's Niagara® SCX streaming media management software is also included with the Niagara 2120, enabling centralized set-up, monitoring, and control.

The Niagara 2120 streaming media appliance (Figure 1) allows you to maximize your audience through Web-based video delivery. It lets you reach your audiences where they live and allows you to stream both live and on-demand video to any IP network. With support for H.264 streaming to the Adobe Flash Platform, you are afforded high-performance streaming capabilities across a broad range of bandwidths to elevate the quality and impact of your Internet video programming. Now you may truly enjoy the power and flexibility of more expensive professional-grade streaming appliances in the compact, easy-to-use Niagara 2120.

Figure 1. ViewCast Niagara 2120





Audience

The audience for this publication includes anyone who uses or administers the Niagara 2120. They should have a basic technical understanding of streaming media. This user guide provides information on the Niagara 2120 only.

Conventions for This Guide

This guide uses the document conventions specified in Table 1 to help you identify different types of information.

Table 1. Guide Conventions

Convention	Description	Example
Bold text	Characters to enter when referenced in a procedure. The names of keys or keys to press.	In the example, enter DTMF as the group type. Press Enter to save your changes.
NOTE:	Provides supplemental information.	NOTE: The prompt may not display if ...
IMPORTANT!	Provides important data that affects how the system or software responds.	IMPORTANT! You must install Niagara SCX prior to configuring SCX options...
CAUTION	Provides information to help avoid possible damage to hardware or a system crash (without data loss).	CAUTION Use case sensitive commands to keep from destroying...
 WARNING!	Provides information to ensure you avoid potential injury, death, or permanent system damage.	 WARNING! Do NOT touch exposed wires.

Rack Mount Safety Instructions

Operating Temperature	The operating ambient temperature of a rack environment may be greater than room ambient if installed in a closed or multi-unit rack assembly. Therefore, users should install the equipment in an environment compatible with the maximum ambient temperature of 40° C.
Reduced Air Flow	You must not compromise the airflow required for safe equipment operation when you install the equipment in a rack.
Mechanical Loading	Mounting of the equipment in the rack should be such that you do not cause a hazard due to uneven mechanical loading.
Circuit Overloading	Consider the connection of the equipment to the supply circuit and the effect that the overloading of the circuits might have on current protection and supply wiring. You must also consider and use the equipment nameplate ratings when you address this concern.
Reliable Earthing	You must maintain reliable earthing of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as using power strips).

FCC Notice



WARNING! You must connect this device and peripherals using shielded cables that comply with FCC radio emission limits.



WARNING! Modifications to this device not approved by ViewCast Corporation could void the FCC-granted authority for the user to operate the device.



WARNING! The **Niagara 2120** complies with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits provide reasonable protection against harmful interference when users operate the equipment in a commercial environment. This equipment generates, uses, and may radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area will likely cause harmful interference. In this case the users must correct the interference at their own expense.

NOTE: To CATV Installer: Pay special attention to Section 820-40 of the NEC that provides guidelines for proper grounding. It particularly specifies that you must connect the cable ground to the grounding system of the building as close to the point of cable entry as practical.



WARNING! Equipment installation must comply with local and national electrical codes.

Environmental Notices

Product Disposal Information:

Dispose of this product in accordance with local and national disposal regulations (if any). Include those regulations governing the recovery and recycling of Waste Electrical and Electronic Equipment (WEEE).

RoHS Compliant:



ViewCast Corporation commits to compliance with the European directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, Directive 2002/95/EC, the RoHS directive.

This product supplied to the European Union does comply with the RoHS directive. ViewCast certifies that this equipment shipped to the European Union conforms to the 2002/95/EC directive.

For current RoHS statement, see www.viewcast.com.

Underwriters Laboratories Inc. Statement



Underwriters Laboratories Inc. has not tested the performance or reliability of the security or signaling aspects of this product. UL only tested for fire, shock and casualty hazards as outlined in UL's Standard for Safety UL 60950-1. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL does not represent, warranty, or certify the performance of reliability of any security or signaling related functions of this product.

Warnings

Only trained and qualified personnel should install, replace, or service this equipment.

Do not attempt to open the case of the appliance. If you do so, you incur a high risk of electrical shock that may cause damage to the appliance or personal physical injury or death to you and/or others. No user-serviceable parts exist inside the appliance. If you open the appliance case or make unauthorized changes to the case, ViewCast voids your warranty.

Install the appliance away from any heat sources. This remains vital to the safety of the product users. Do not install the appliance near any heat sources such as:

- Radiators
- Heat registers
- Stoves
- Other heat-producing equipment



WARNING! Installing the appliance near heat sources could result in personal injury or death.

Never insert objects of any kind into the appliance through any appliance openings, as the objects may touch dangerous voltage points, short out parts, and result in a risk of fire or electrical shock.

Do not stack the appliance atop or below other electronic devices as this can cause heat build-up and vibration of the appliance. These conditions can damage the appliance thereby voiding the limited warranty.

NOTE: You may stack multiple Niagara 2120 units as these appliances accommodate stacking.

Do not install the appliance in any area where the temperature is less than 5°C or more than 40°C. Transfer from temperature extremes may cause condensation. Let the appliance remain unplugged at room temperature for at least 45 minutes before connecting it.

Use an outlet with surge suppression or ground fault protection when using the appliance. Unplug the power cord from the wall outlet and disconnect the lines between the appliance and the video source for added protection:

- During a lightning storm
- During dangerous weather conditions
- When the encoder remains unattended or unused for long periods

Reduce the risk of fire or electric shock. Do *not* expose the appliance to any rain or moisture. Exposing the appliance to rain or other types of moisture could result in appliance damages. Do not place any liquids on or near the appliance. If you place liquids in any form on or near the appliance, do so at your own risk, for you incur a high risk of electrical shock that could occur and cause damage to the appliance.



WARNING! Exposing the appliance to rain or other types of moisture could result in physical injury or death. Any liquids on or near the appliance may result in electrical shock and personal injury or death.

Refer all servicing to authorized service personnel. You must have authorized personnel only service any damaged appliance. Relevant damage may occur with but is not limited to the following:

- An unplugged or damaged power supply cord
- Spilled liquid on the appliance
- Fallen objects on the appliance
- Appliance exposure to rain or other moisture or liquid
- Failure to perform functions as described in the User Guide
- A dropped appliance

ViewCast assumes no liability or responsibility for any damaged appliance that clients continue using.

Use only attachments, accessories, or equipment specified by the manufacturer with the appliance. Using accessories or attachments not recommended by the encoder manufacturer voids the Limited Warranty.

Do not attempt to service the appliance yourself. If you open or remove covers, you may expose yourself to dangerous voltage. Such action voids the Limited Warranty. Refer all servicing issues to authorized service personnel only.

The plug-socket combination that serves as the main disconnecting device must be accessible at all times.

Protect the power cord from anyone walking on it and being strained or pinched particularly at plugs, electrical receptacles, and the point where the power cord exits the appliance.

Do not use adapter plugs or remove the grounding prong from the power cable.

Use only the type of power source indicated on the marking label on the back panel of the unit to operate the appliance. Unplug the appliance power cord by gripping the plug and removing it from the power source. Do not pull the cord to remove the power source from the appliance.

Do not plug the appliance into a wall outlet that contains an overload of electrical cords or power strips/extension cords. This type of overload may result in fire or electrical shock risks.

Always handle the appliance carefully. Always avoid excessive shock and vibration to the appliance. Excessive shock or vibration can damage the appliance.



WARNING! Excessive shock or vibration to the appliance may result in electrical shock and personal injury or death.

Chapter 1: Overview

Before you can use your Niagara 2120 streaming media appliance, you will first need to set up and configure it. This chapter is dedicated to providing you with the details and step-by-step instructions you need to make your installation as quick-and-easy as possible.

All you need to get started are the four following requirements:

- Your audio and video source (such as a camera or deck)
- A streaming media server or hosting provider
- An IP connection and/or Internet connection
- A networked computer running a compatible browser

The Niagara 2120, an easy-to-use streaming device, allows you to:

- Connect to a compatible browser on a dynamic host configuration protocol/domain name server (DHCP/DNS) network.
- Configure and connect your audio and video source to the Niagara 2120.
- Select your output formats and streaming settings.
- Enter your streaming server information.
- Start streaming your media.

You can configure and use the Niagara 2120 straight from the box for any streaming activities. Use the Web interface for setting options and controlling your Niagara 2120 from another networked computer, as well as advanced options.



WARNING! Read the installation instructions before connecting the system to the power source.

Media Appliance Functions

Although it has many features and capabilities, the Niagara 2120 streaming media encoder performs, in its most basic functions, as follows:

- Takes analog audio and video inputs
- Captures the signals
- Encodes the signals into digital IP video formats
- Delivers the IP audio and video content to a storage device or streams it over an IP network

Install Overview

This section addresses the high-level actions you must perform to physically connect and setup your Niagara 2120 system.

You must complete the following primary tasks to install the Niagara 2120:

1. Address and comply with all prerequisites.
2. Connect the Niagara 2120 streaming media appliance using its power source.
3. Connect the video source (camera or video recorder) to the system.
4. Connect the Niagara 2120 to an IP network.
5. Configure the Niagara 2120 system.

Prerequisites

Prerequisites you must consider prior to installing and connecting the Niagara 2120 include:

- Ensure you have all packaged items and that they remain undamaged and in working order.
- Ensure your environment meets all system requirements.
- Ensure you comply with all safety instructions, notices, and warnings including:
 - *Rack Mount Safety Instructions*
 - *FCC Notice*
 - *Environmental Notices*
 - *Warnings*

Package Contents

Completely unpack all contents from the box and inspect each item for damage. Ensure that you have all the components listed below:

Appliance	Niagara 2120
Power Cables	<ul style="list-style-type: none">• One of the following:<ul style="list-style-type: none">— North America Power Cable (110 vac)— International Power Cable (220 vac)— UK Power Cable (220 vac)• AC to DC converter
Converter	<ul style="list-style-type: none">• BNC-to-RCA, male-to-female (3)• BNC-to-mini-DIN (S-Video) adapter
Guides	<ul style="list-style-type: none">• Package insert (end-user license agreement, welcome letter, package content list)

- Quick Start Guide
- Software Niagara 2120 CD

If any components are missing or damaged, do not continue with the installation. Contact the ViewCast reseller from which you purchased your Niagara 2120 streaming media appliance for assistance in obtaining any missing parts or for parts replacement.

System Requirements

Ensure your computer meets the following system requirements.

Browser Interface	Any Internet Explorer (IE)-based computer, workstation, or laptop that interfaces to a dynamic host configuration protocol/domain name server (DHCP/DNS)-compatible network
User Interface	High speed internet, dial-up, and mobile device users

Specifications

- Dual core processor
- 1 GB RAM
- 120 GB SATA HDD
- Osprey 240e technology integrated on motherboard
- Compact – 1 RU, ½ Rack (11.5" x 7.5" x 1.75")
- 4.9 lbs (2.2 kg)
- Power 60W

Niagara 2120 Front Panel

You should familiarize yourself with the front panel controls for the Niagara 2120. Besides the basic buttons for power, start/stop, and audio volume control, several indicator lights also exist. Figure 2 and Table 2 below illustrate the buttons and lights that constitute the front panel functions and interfaces.

Figure 2. Niagara 2120 Front Panel

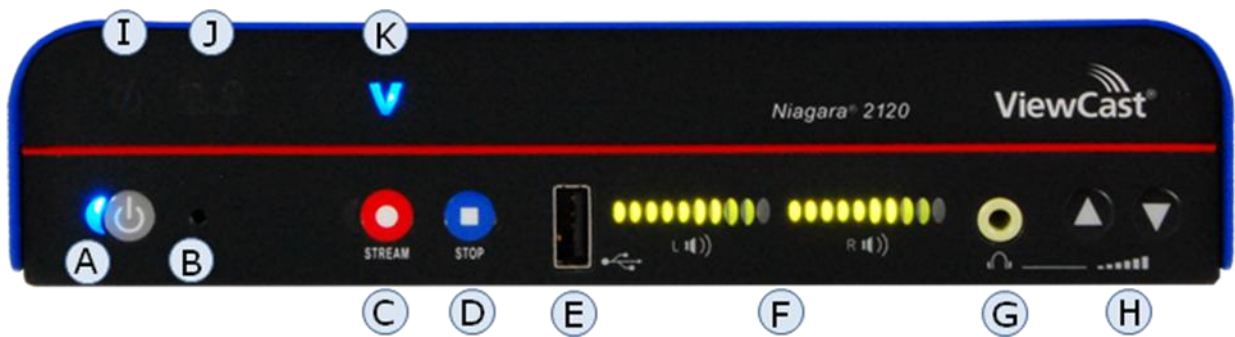













Table 2. Front Panel Lights and Button Descriptions

Item	Control Button	Name	Description
A		Power Button with Indicator Light	<ul style="list-style-type: none">Starts the Niagara 2120.Indicator light (blue) blinks to indicate power up activity.Press this button once to turn off the Niagara 2120 when it is on.Remains solid when set to allow you to encode.Press and hold for 5 seconds to execute an immediate power off.
IMPORTANT! Use this only when the system does not respond.			
B		Reset Button	<ul style="list-style-type: none">Resets the Niagara 2120.Use a pointed device to insert in the hole and press the reset button.This button has three different options:Press and release after the first set of 10 LEDs start to light (approximately three seconds) to reboot the Niagara 2120.

Item	Control Button	Name	Description
			<p>NOTE: The lights on the volume indicator will illuminate in one-second intervals.</p> <ul style="list-style-type: none"> Press and release after the second set of 10 LEDs <i>start</i> to light (approximately 4 to 6 seconds) to keep all set profiles and restore the Niagara 2120. <p>NOTE: The lights on the volume indicator will illuminate in one-second intervals but do <i>not</i> progress all the way to the far right.</p> <ul style="list-style-type: none"> Press and hold for approximately 10 seconds until all 20 LEDs remain lit to restore the Niagara 2120 to complete factory defaults. <p>IMPORTANT! This option deletes all previously set profiles.</p>
C		Streaming Button and Indicator Light	<ul style="list-style-type: none"> Activates streaming of all profiles assigned to the button. Indicator light (green) blinks to indicate when the stream is preparing to start. Indicator light (green) remains solid once you begin streaming. <p>NOTE: Do <i>not</i> attempt to encode while light continues blinking.</p>
D		Stop	<ul style="list-style-type: none"> Stops the encoder streaming activity when you press this button once.
E		USB Port	<ul style="list-style-type: none"> Allows exporting files to USB devices and installing updates or firmware.
F		Audio level meters	<ul style="list-style-type: none"> Shows incoming left and right audio channel input.

Item	Control Button	Name	Description
G		Headphone Jack	<ul style="list-style-type: none"> Allows you to connect headphones to the Niagara 2120 for audio monitoring.
H		Volume Button (Up/Down)	<ul style="list-style-type: none"> Audio level headphone control. This control changes the volume on the headset output only.
I		Alarm and Status Indicator	<ul style="list-style-type: none"> This indicator illuminates when a system alert occurs.
J		Remote Control	<ul style="list-style-type: none"> Displays to indicate a remote user. A remote user is accessing the Niagara 2120 across the network (using the Niagara 2120 Web interface).
K			<ul style="list-style-type: none"> Video encoding status (active).

Review the Niagara 2120 Rear Panel

Figure 3 and Table 3 below describe all connectors and other components of the Niagara 2120 rear panel.

Figure 3. Rear Panel

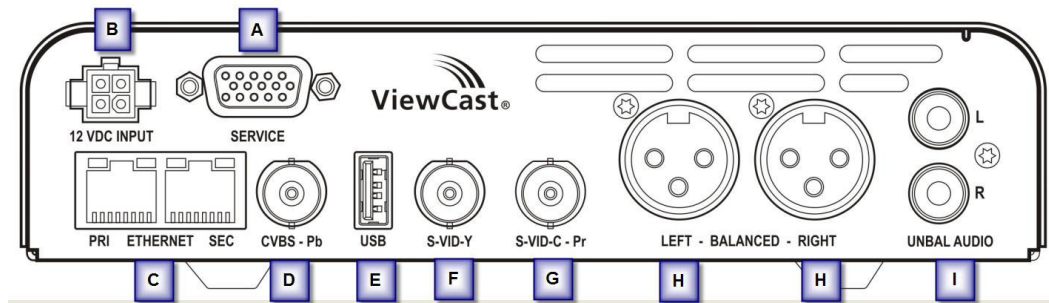


Figure 3 shows the rear panel of the Niagara 2120. Using the reference chart and images below, you can connect the appropriate device and power to the Niagara 2120.

Table 3. Rear Panel Connection Descriptions

Port	Description
A Service	<ul style="list-style-type: none"> Qualified ViewCast field technicians should be the only ones to use this connection.
B Power (DC Input 12V)	<ul style="list-style-type: none"> Direct current (DC) power supply for power input (12 Volt). This port allows you to connect the Niagara 2120 to its power supply.
C PRI Ethernet Sec	<ul style="list-style-type: none"> Connects the Niagara 2120 to the IP network.
D CVBS – Pb	<ul style="list-style-type: none"> Connects the composite video for the Niagara 2120. This analog component video BNC for Pb input allows professional-grade video connections.
E USB	<ul style="list-style-type: none"> Connects USB control devices, such as a memory card (USB memory device, keyboard, and mouse).
F S-Vid-Y	<ul style="list-style-type: none"> Standard video port that provides (Y) connection in S-video (Y/C) for most BNC video cameras and players. This analog component video BNC for Y input allows professional-grade video connections.
G Vid-C – Pr	<ul style="list-style-type: none"> This analog component video BNC for Pr input allows professional-grade video connections.

Port	Description
H Balanced Left and Right Audio Inputs	<ul style="list-style-type: none"> • Left/Right XLR connector for line level balanced audio sources. • Professional audio engineers use these inputs on high-end audio and video playback equipment. • Noise cancellation and balanced stereo.
I Unbalanced Audio Connectors	<ul style="list-style-type: none"> • Left/Right RCA connector for stereo input. • Found on most standard video players and cameras.

Connecting the Niagara 2120

Follow the steps in Table 4 to configure all Niagara 2120 connections. The example uses composite video input and unbalanced audio. The steps detailed in Table 4 refer to a direct connection to the Niagara 2120 only.

Table 4. Configure Connections

Step	Action
1.	Connect the composite video (CVBS Pb – item D on Figure 3). Ensure you have a tight connection by rotating the cuff to connect.
2.	Connect the right and left audio. Refer to Figure 3 item I for left and right connections.
3.	Connect the power DC adaptor by linking the clasp over the top anchor (12V DC Input – item B on Figure 3).
4.	Attach the Niagara 2120 to the network input (PRI Network – item C on Figure 3).
5.	Press Power (item B on Figure 2). Refer to Table 3 for descriptions for these inputs.


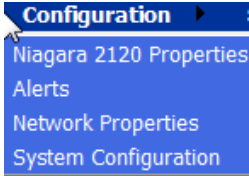

Niagara 2120 Menu Bar Commands

The home page menu bar (Figure 4) allows you to use the commands described in Table 5.

Figure 4. Menu Bar



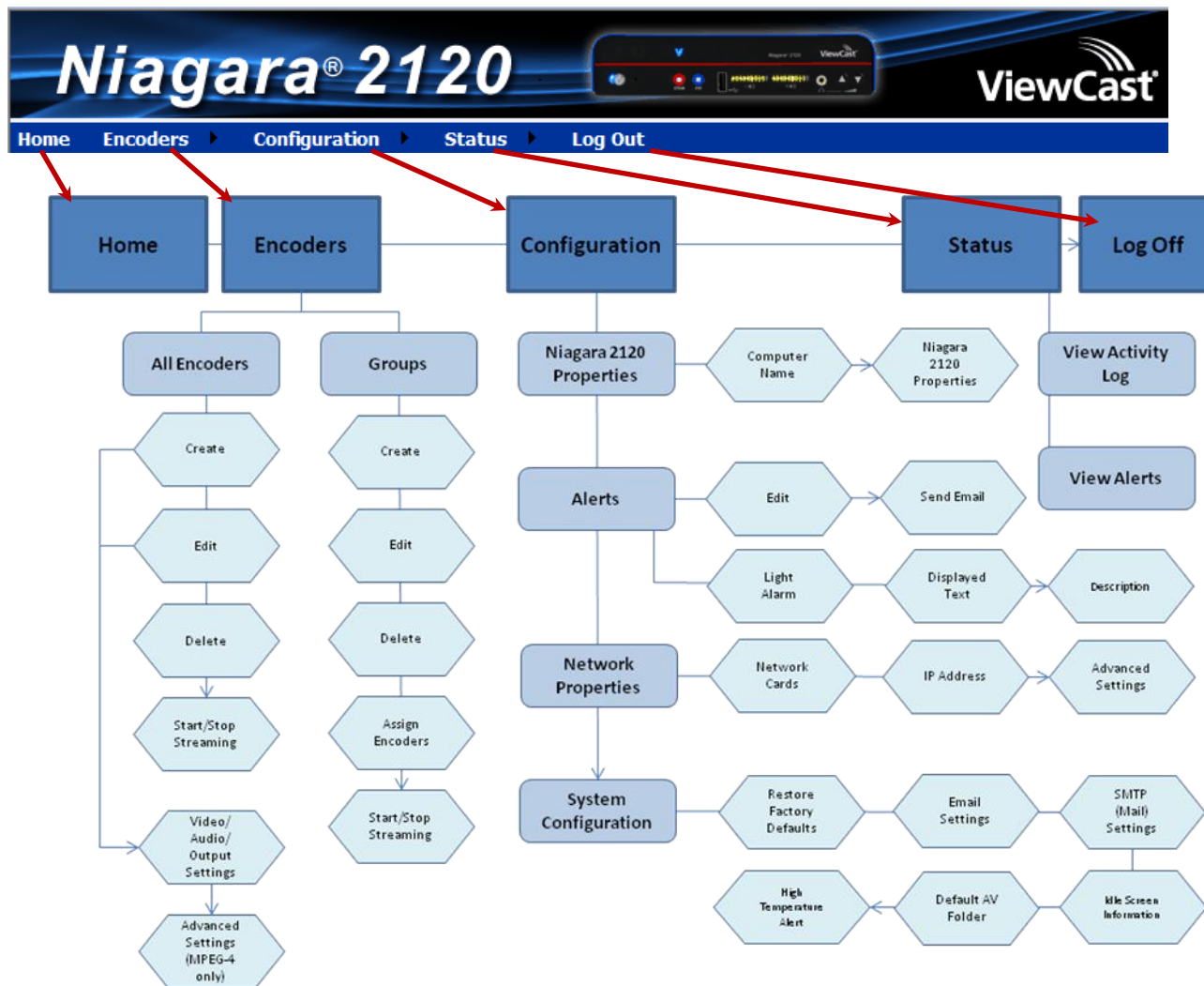
Table 5. Menu Bar Commands

Menu	Command	Function
Home		<ul style="list-style-type: none"> View general administrative information about the ViewCast Niagara 2120.
Encoders		<ul style="list-style-type: none"> All Encoders – View the encoder profiles available to start on the encoder box. Active Group – Allows you set the one group that you assign to the front panel Stream button. Groups – Assign groups and encoders to that group.
Configuration		<ul style="list-style-type: none"> Niagara 2120 Properties – View details on the Machine Properties of the Niagara 2120 including the Network Name, Serial Number, and all software versions installed. Alerts – Modify the settings for each application alert Niagara 2120 can generate during normal operations. Network Properties – View information on Niagara 2120 network properties and addresses for both NIC ports and modify these properties. System Configuration – Modify the system configuration including setup for email alerts from Niagara 2120 whenever it encounters an operation error.
Status		<ul style="list-style-type: none"> View Activity Log – View all Niagara 2120 activities including the time and date for each event. View Alerts – View all alerts including the time and date for each alert.
Log Out		<ul style="list-style-type: none"> Allows users to log off the system's Web interface.

Niagara 2120 Browser Windows Flow

Figure 5 shows the interrelationship and flow of the available configuration windows you may use to configure the Niagara 2120.

Figure 5. Niagara 2120 Browser Windows



Chapter 2: Easy Setup

The easy setup option explores the optimal configurations for the novice user to set up the Niagara 2120 quickly and easily. Easy setup includes actions you can perform on your Niagara 2120 streaming media encoder using the Web interface to include configuring the following:

- Encoder settings
- Groups
- Network properties
- Machine properties
- System
- System alerts

Web Interface

The Niagara 2120 Web interface presents a logical flow of configuration information for the encoding appliance. Refer to Figure 5 for a diagram and main menu options. Major considerations display on the main menu and address:

- Home
- Encoders
 - *All Encoders including Encoder Properties*
 - *Active Group*
 - *Groups*
- Configuration
 - *Niagara 2120 Properties*
 - *Alerts including Settings*
 - *Network Properties*
 - *System Configuration*
- Status
 - *Activity Log*
 - *Alerts*
- Log Out

Easy First Time Setup

You should read all instructions, notices, and warnings before getting started with your new Niagara 2120 hardware for the first time. Also, ensure you have all required parts and meet all system requirements before installing this product.

Do not continue with the installation if you find any components missing or damaged. Contact the ViewCast reseller where you purchased your Niagara 2120 system for assistance in obtaining any missing or replacement parts.

Connecting to an Electrical Power Source

Niagara 2120 ships with one of the following power cables:

- North America power cable
- International power cable
- UK power cable

Follow the steps in Table 6 to connect your power source to the Niagara 2120.

Table 6. Connect the Power Source

Step	Action
1.	Attach the block end to the power cable that comes with the equipment.
2.	Connect the adaptor to the unit 12 VDC input located on the upper back panel corner of the Niagara 2120.




WARNING! The plug-socket combination must remain accessible at all times as it serves as the main disconnecting device.

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Performing the Initial Start Up

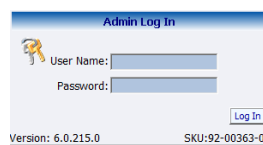
Complete all steps in Tables 4 and 6 for connecting your Niagara 2120. Finally, you must follow a series of menus that let you set up the initialized system (Table 7). The steps in Table 7 refer to a *direct* connection to the Niagara 2120 only.

Table 7. First Start Up Session

Step	Action
1.	Ensure that you connect all devices (power cords, appliances, streaming devices, etc.) to the Niagara 2120.
2.	Press POWER  on the front panel to start the Niagara 2120.
3.	From another computer on the same DHCP/DNS network as the Niagara 2120, launch Internet Explorer and type in http:// and the serial number of your Niagara 2120.
4.	If you do not have a DHCP network or you cannot connect to the Niagara 2120 through its DNS name, you can connect a monitor, mouse, and keyboard directly to the Niagara 2120 to obtain or change the IP address. Connect a standard VGA monitor to the service connector and the mouse/keyboard to USB ports. The Niagara 2120 will have a Microsoft XP desktop. From the Desktop, you will launch Internet Explorer.
5.	Locate the serial number on the bottom of the appliance (in the format gf10xxxxxx).
6.	Enter your valid user name and password and click Log In when the Admin Log In window (Figure 6) displays.

IMPORTANT! The setting to log in for the first time, defaults to the user name *admin* and the password *admin*.

Figure 6. Admin Log In Window



NOTE: System administrators should previously configure all user names and passwords for those who they allow to log on to the system.

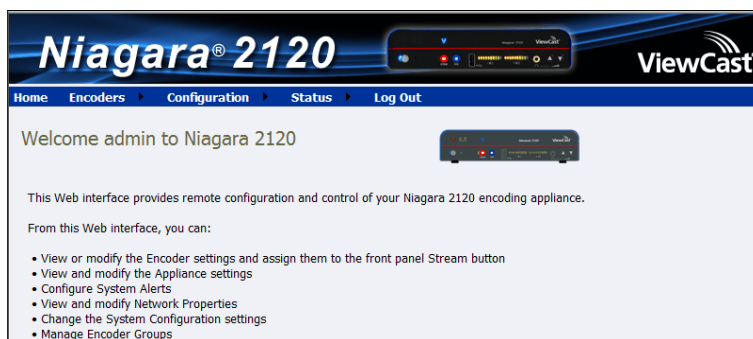
7. The first time you start the Niagara 2120 and log in, the system prompts you for the date, time, and video standard (Figure 7). You may accept the default date, time, and video standard or enter your desired date, time, and video standard then click **Submit**.

Figure 7. Date and Time Settings

Step	Action

8. The **Admin Log In** window may reappear once you submit the date, time, and video standard fields. You must enter User Name and Password again. This time when you enter your valid user name and password, the system displays the **Welcome** window (Figure 8) and **Niagara 2120 Main Menu**. Refer to Table 5 for a list and description of main menu options.

Figure 8. Welcome



NOTE: You must identify, at a minimum, an encoder, a group, and basic system and network configuration settings.

The Niagara 2120 front panel status light remains solid green once it becomes ready to begin streaming.

Connecting to an IP Network

The Niagara 2120 network settings for its network interface defaults to obtain an IP address from a DHCP server on the network. If a DHCP server is not available or is not on the network, Niagara 2120 assigns its own IP address.

NOTE: If you are not familiar with network protocols, contact your network administrator for assistance. If you are not able to browse to the unit with a DHCP network, you may connect a monitor, keyboard, and mouse to the Niagara 2120 to determine and set the network connections.

Table 8. Connect to Network

Step	Action
1.	Click Configuration ➤ Network Properties . The Network Properties window appears (Figure 9). The machine name is in the IP Address field.

Figure 9. Connect to IP Network



NOTE: You need not modify these default settings for most network environments.

- Click **Submit** to accept all network settings you configure.

Defining the Network Properties

Table 9 provides **Network Properties** and the actions you can choose for each. To view this window, click **Configuration** ➤ **Network Properties**, then click **Use the following IP information**.

Table 9. Network Properties Window Options

Field	Action
Network Cards	Options include primary NIC and secondary NIC
Description	Describes the NIC option
Obtain an IP address automatically or Use the following IP information	Click one of the radio buttons to either obtain an IP address automatically or use input IP information (user inputs). Refer to IP Address field below for information on setting your own IP address.
IP Address	Input or accept the default static IP address . Press Enter to accept your selection.
NOTE: You can only perform this action and the next four (Subnet Mask, Default Gateway, Preferred DNS Server, and Alternate DNS Server) if you click Use the following IP information . You must click Submit to save any changes.	
Subnet Mask	Input or accept the default. Press Enter to accept your selection.
Default Gateway	Input or accept the Default Gateway. Press Enter to accept your selection.
Preferred DNS Server	Input or accept the default preferred domain name server (DNS). Press Enter to accept your selection.
Alternate DNS Server	Input or accept the default alternate domain name server (DNS). Press Enter to accept your selection.
Advanced Settings On	<ul style="list-style-type: none"> You may accept the default workstation identifier (Advanced Setting on field). You may alternately enter a new computer name by clicking the underlined computer name to go to the Machine Properties window and click Edit to change the computer name. Click Submit to change the name.
NOTE: If you change the computer name, you must reboot the system after you submit it.	
MAC Address	View the default Media Access Control (MAC) address.

Field	Action
Primary WINS Server	Input or accept the primary windows server identifier. Press Enter to accept your selection.
Secondary WINS Server	Input or accept the secondary windows server identifier. Press Enter to accept your selection.
Active Network Link	Displays the status of the network link. Position your cursor in any appropriate field and enter your selections. Press Enter or Submit to accept all selections.

Chapter 3: Perform Basic Operations

Basic operations include but are not limited to the following:

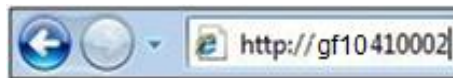
- Viewing all encoders
- Starting an encoder
- Editing an encoder
- Stopping an encoder
- Viewing encoder groups
- Starting an encoder group
- Editing an encoder group
- Stopping an encoder group

Logging In

Table 10. Logging In

Step	Action
1.	<ul style="list-style-type: none"> Locate the serial number on the side or bottom of the appliance (in the format gf10xxxxxx).
2.	Open the Web browser on your computer.
3.	You can either: <ul style="list-style-type: none"> Type the Niagara 2120 serial number in the Address bar (Figure 10) and press Enter.

Figure 10. Address Bar



Or

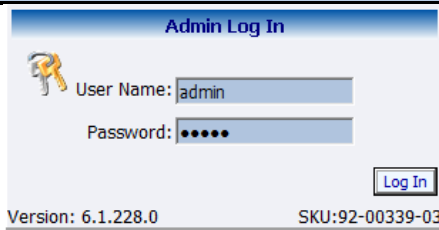
- Type the IP address in the Address bar (Figure 11) and press **Enter**.

Figure 11. IP Address



- The Admin Log In window appears (Figure 12).

Figure 12. Admin Log In Window

Step	Action
	

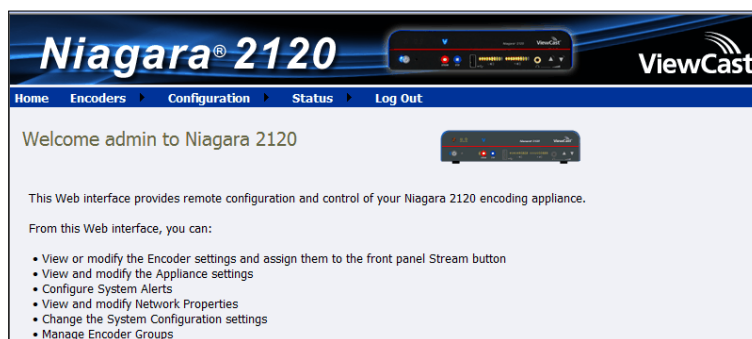
4. Type the **User** name and **Password**.

IMPORTANT! The setting to log in for the first time, defaults to the user name *admin* and the password *admin*.

NOTE: System administrators should previously configure all user names and passwords for those who they allow to log on to the system.

5. Press **Login**. The Niagara 2120 **Welcome** window and **Menu Bar** appear (Figure 13).

Figure 13. Welcome Window



Viewing All Encoders

The Encoders window provides a list of all of the encoder profiles loaded on the Niagara 2120. On the home page, click **Encoders** ➤ **All Encoders**.

Figure 14. Encoders Window

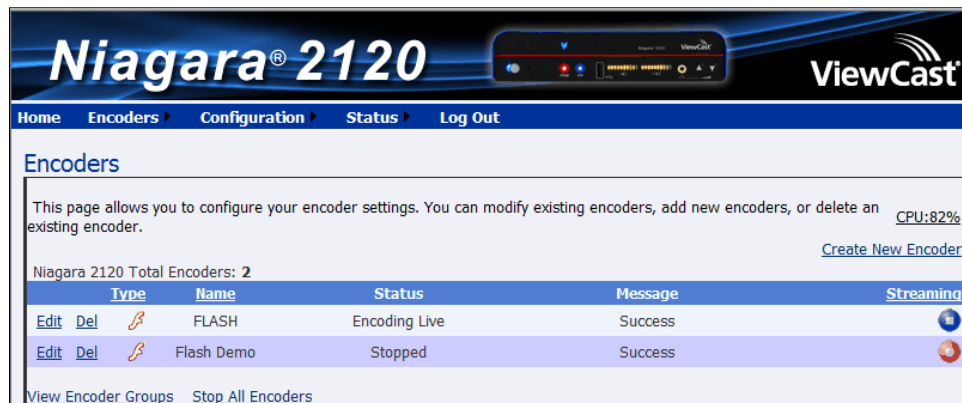


Table 11. Encoder Options

Encoder Option	Description
Create New Encoder	Allows you to create a new encoder.
Total Encoders	Displays the total number of encoders on the Niagara 2120.
Edit	Allows you to edit the encoder properties including groups, streaming settings, and advanced streaming settings.
Del	Lets you delete an encoder from the list.
Type	Displays the encoder type.
Name	Displays the name of the encoder profile. This name appears on the LCD display on the front panel.
Status	Displays the result of the last action.
Message	Displays the result of the last action.
Streaming	Displays as either Started (blue circle button) or Stopped (red circle button) as the options for streaming for this encoder.

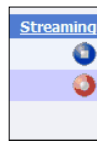
Starting an Encoder

To start an encoder, on the home page click **Encoders** ➤ **All Encoders**.

Table 12. Starting an Encoder

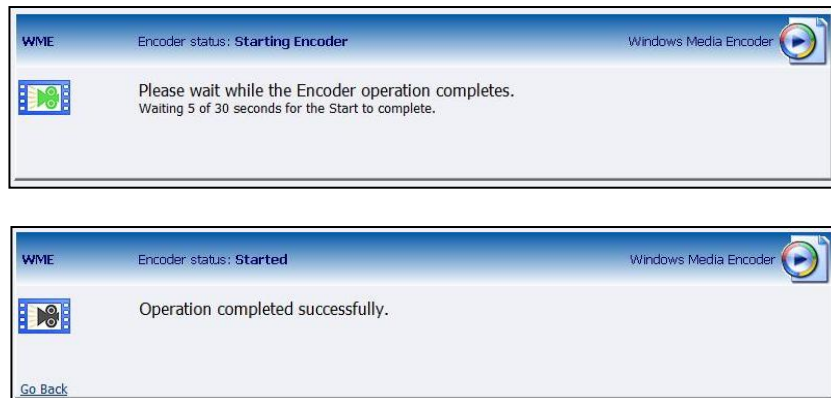
Step	Action
1.	Click the red circle Stopped icon (Figure 15) in the Streaming column for the encoder you want to start streaming.

Figure 15. Stopped Icon



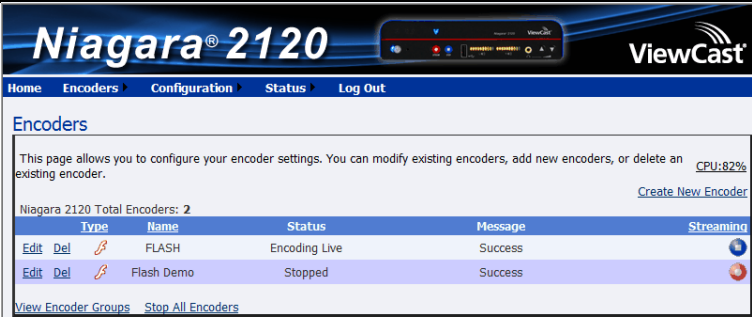
Messages appear detailing the encoder start progress (Figure 16).

Figure 16. Encoder Start Status



The Encoders window appears with the encoder status updated and the streaming indicator changes to a blue circle **Started** icon (Figure 17).

Figure 17. Encoders Window

Step	Action
	

Stopping an Encoder

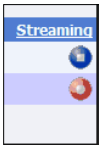
To stop an encoder, on the home page click **Encoders** ➤ **All Encoders**.

Table 13. Stopping an Encoder

Step	Action
------	--------

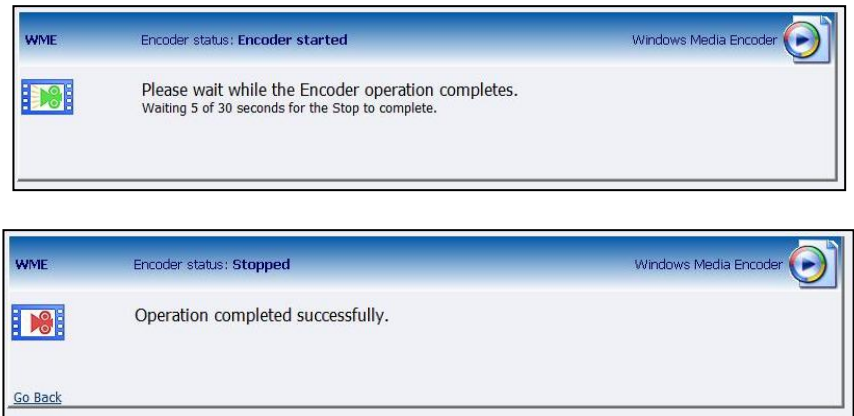
1. Click the blue **Started** icon of the encoder you wish to stop streaming (Figure 18).

Figure 18. Started Icon



Messages appear detailing the encoder stop progress (Figure 19).

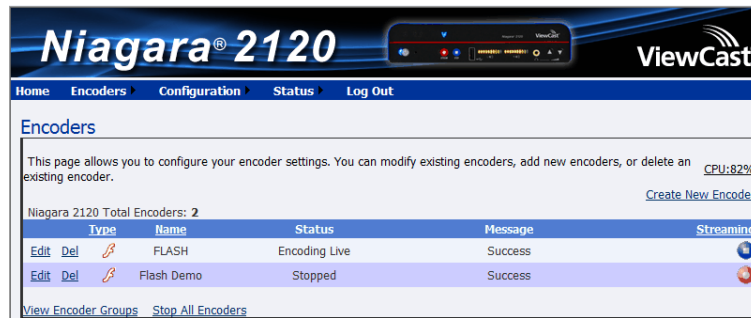
Figure 19. Encoder Stop Status



The Encoders window appears with the encoder status updated to reflect the **Stopped** mode and the streaming indicator changes to a red circled **Stopped** icon (Figure 20).

Step	Action
------	--------

Figure 20. Encoders Window



Editing an Adobe Flash H.264 Encoder

When you create a new encoder, the Encoder Properties window appears. The Encoder Properties windows for editing a new encoder or an existing encoder are identical. You must configure the video and audio settings for each encoder type. Use the tabs Video, Audio, Output, and H.264 Settings to edit the settings. Begin with configuring the video and audio settings, then the streaming properties. The streaming properties and advanced streaming settings are different for each type of encoder.

From the Flash Encoder Properties window (Figure 21), you can set the encoder to start streaming automatically by clicking the **Auto Start** checkbox. You can also start the encoder from this window by clicking the **Start Flash Encoder** link in the top right corner of the window.

Click **Encoders** ➤ **All Encoders** from the home page. Then click the **Edit** link next to the encoder whose properties you wish to modify. The system displays the Encoder Properties window for the selected encoder.

IMPORTANT! If you make any changes to the Encoder Properties window, you must click **Submit**. Otherwise, all your changes will be lost.

Figure 21. Flash Encoder Properties

The screenshot shows the 'Encoder Properties' window for a Flash encoder. At the top, there's a header bar with the title 'Encoder Properties', a text field for 'Name' containing 'FLASH', an 'Auto Start' checkbox, and a 'Stop Flash Encoder' button with a red stop icon. Below the header is a tabbed interface with 'Video', 'Audio', 'Output', and 'H.264 Settings' tabs. The 'Video' tab is active, showing 'Video Input Settings' (Source: Video Device 1.1, Input: Composite), 'Video Output Settings' (Proportions: Standard, Size: FULL 640x480), and 'Video Encode Settings' (Video Encoder: H264, Frame Rate: 29.97 fps, Bitrate: 768 kbps). To the right of these are 'Video Filter Settings' with sliders for Brightness (0 to 200, value 95), Contrast (0 to 200, value 97), Hue (-90 to 90, value 0), and Saturation (0 to 200, value 107), each with a 'Restore' button. Below the filters is a 'De-Interlace' section with radio buttons for None, Auto, InverseTelecine, and MotionAdaptive (which is selected). At the bottom left, there are links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups'. A 'Submit' button is located at the bottom right of the main settings area.

Video Tab

Flash adds some additional frame and bit rate controls. The frame rate changes the frames per second that the video will encode. You can use the audio format setting to modify the audio frequency and change stereo to mono. The bit rate settings pertain to the amount of data per second the audio and video are captured. Decreasing the bit rate for both or either decreases the playback viewing quality.

Figure 22. Video Tab

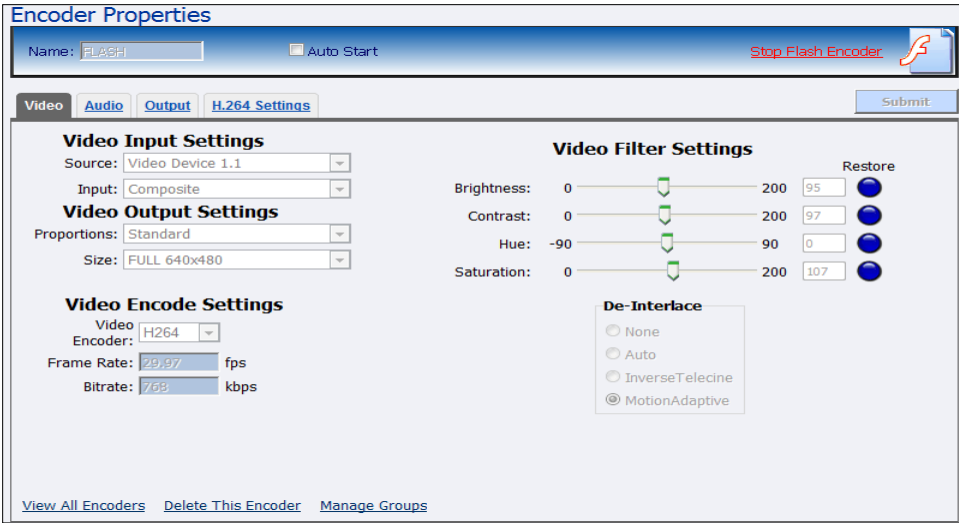


Table 14. Configuring Video Input Settings

Step	Action
1.	<p>In the Source field, click a device from the drop-down list.</p> <p>The Niagara 2120 is a single-channel encoder. The video source is initialized into multiple inputs denoted by the following incrementing decimal values:</p> <ul style="list-style-type: none">• Disabled• Video Device 1.1• Video Device 1.2• Video Device 1.3• Video Device 1.4• Video Device 1.5
2.	<p>In the Input field, click the video input.</p> <div><p>IMPORTANT! The video input must match the connectors on the back of the Niagara 2120 and your video source.</p></div>
3.	<p>The Proportions field has two settings:</p>

Step	Action
	<ul style="list-style-type: none">• Standard – Square pixels for a VGA monitor• CCIR-601 – Elongated pixels for a TV monitor <p>Click the setting that reflects the type of display on which your viewers will view your content. For example, if you want to stream your video on the Internet for the user to view on a computer monitor, click Standard. If you select an inaccurate setting, your video will distort.</p>
4.	<p>In the Size field, click the pixel size of the encoded video. The standard sizes include:</p> <ul style="list-style-type: none">• Full-size for full screen video• CIF for video scaled from full-size to ¼ size• QCIF for video scaled from full-size to ¼ of CIF size• Custom <p>You can also specify a custom size for your video. This customization is useful when you are capturing video to play on a mobile video-device that requires a non-standard size for compatibility.</p> <p>When you click Custom, two additional fields appear so you can enter the exact size you want the resulting video to be (Figure 23).</p>

Figure 23. Custom Fields

Size: CUSTOM

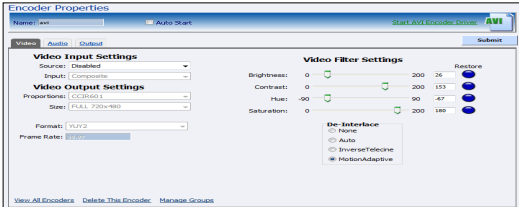
Width: 180

Height: 120

IMPORTANT! Ensure all of the encoders using the same video Proportion and Size settings also use the same Video and Audio Source settings. For example, all encoders capturing at Standard proportion and CIF size are set to Osprey-5x0 video Device 1.1 while encoders capturing at Standard proportion but QCIF resolution are set to Osprey-5x0 Video Device 1.2.

- 5. Enter the frames per second in the **Frame Rate** field.
- 6. Enter the **Bitrate**.
- 7. Drag the sliders to adjust the **Brightness, Contrast, Hue, and Saturation** (Figure 24).

Figure 24. Video Filter Settings

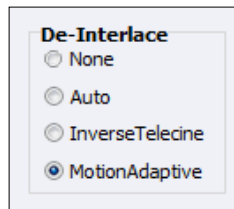


Step	Action
------	--------

NOTE: Click **Restore** to the right of the filter to reset the settings to the default.

8. Click the **De-Interlace** setting you want to apply (Figure 25). Options include:
 - **None**
 - Performs no de-interlacing of any kind.
 - **Auto**
 - Applies inverse telecine de-interlacing to all telecine video.
 - Applies motion adaptive de-interlacing to all video that is not telecine.
 - Switches dynamically between the two modes as the content changes.
 - Available for NTSC video only.
 - **Inverse Telecine**
 - Drops the redundant fields and reassembles the video in a 24 fps progressive format.
 - Applies inverse telecine de-interlacing to all telecine video.
 - Performs no de-interlacing of video that is not telecine.
 - Available for NTSC video only.
 - **Motion Adaptive**
 - Is an algorithm for de-interlacing pure video (non-telecine) content.
 - Applies motion adaptive interlacing to all video. It detects which portions of the image are still and which portions are in motion then applies different processing to each scenario.

Figure 25. De-Interlace Settings



NOTE: Telecine and inverse telecine only apply to NTSC video. They are not for PAL and SECAM video. The system disables **Auto** and **Inverse Telecine** choices when you select either **PAL** or **SECAM** as the video standard.

9. Click **Submit**.

Audio Tab

Figure 26. Audio Tab

VideoAudioOutputH.264 SettingsSubmit

Audio Input Settings

Source: Audio Device 1

Input: Unbalanced

Audio Output Settings

Format: 44.100 kHz, 16 bit, Stereo

Bitrate: 128 kbps

Audio Encoder: AAC

☐ Mute Audio

Left Volume: 0 190

Right Volume: 0 190

View All Encoders

Delete This Encoder

Manage Groups

Table 15. Configuring Audio Settings

Step	Action
1.	In the Source field, select an audio source from the drop-down list. The audio source is multiple inputs denoted by the following incrementing decimal values: <ul style="list-style-type: none">• Disabled• Audio Device 1• Bluetooth Hands-free Audio
2.	In the Input field, click the audio input. The connection is either Unbalanced or XLR Balanced . <div><div>IMPORTANT! The audio input must match the source connected on the back of the Niagara 2120 and your audio source.</div></div>
3.	Click the Format .
4.	Click the Bitrate .
5.	Click the Audio Encoder.
6.	(Optional) Click the Mute Audio checkbox to mute audio.
7.	Drag the sliders to adjust the Left Volume and Right Volume .
8.	Click Submit .

Output Tab

These advanced settings affect the way the Encoder performs and if set incorrectly may lead to abnormal encoder operations (Figure 27). Refer to *Appendix B* for suggested values for the type of video you are streaming. You need Adobe Flash Media Server 2.5 or greater to stream Flash H.264.

Figure 27. Output Tab

The screenshot shows the 'Output' tab of the encoder settings. It is divided into two main sections: 'Server Settings' and 'Output To File'. In 'Server Settings', 'Enable Streaming' is checked, and 'Embed System Time as Timecode' is unchecked. The 'Server Address' is 'rtmp://p.ep7797.i.akamaientrypo', 'Stream Name' is 'DionStream@779', 'Server Type' is 'Akamai Entry Point', 'User Name' is '49063', and 'Password' is '51VNij'. The 'Frame Interval' is set to 1. In 'Output To File', 'Save to file' is checked, 'Create unique file' is unchecked, and the 'File Name' is 'DAVRes\Out\capture.flv'. A 'Submit' button is in the top right. At the bottom, there are links: 'View All Encoders', 'Delete This Encoder', and 'Manage Groups'.

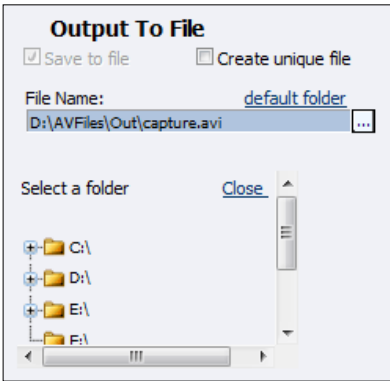
Table 16. Configuring Output Settings

Step	Action
1.	Click the Enable Streaming checkbox to enable live Flash streaming.
2.	Enter the proper IP address in the Server Address field.
3.	Enter the Stream Name .
4.	Click the Server Type . Options are available for streaming directly to Akamai and Limelight CDNs.
5.	Enter the User Name and Password.
6.	Click the Enable System Time as Timecode checkbox.
7.	Click the Frame Interval.
8.	You can either: <ul style="list-style-type: none"> Click the Save to File checkbox to save the encoded content to a file. Each time you start this encoder, the system overwrites the previous file. Or <ul style="list-style-type: none"> Click Create unique file to create a file that the system does not overwrite.

Step	Action
9.	Accept the default location that displays in the File Name field or choose your own location for the file. To choose your own personal location click the link (horizontal ellipses or ...) to the right of the File Name field and display the options (Figure 28).

NOTE: By default, the system sets this folder to D:\AVFiles\Out\ with a default filename of capture.xxx.

Figure 28. Save to File Location



WARNING! ViewCast strongly recommends you do not alter the default directory setting unless you fully understand the risk of saving your files to a directory not located on drive D. If you save your files to another drive on the Niagara 2120, the system could delete the files when you use the Restore to Niagara 2120 Factory Defaults feature.

Only drive D on the Niagara 2120 has available storage to save your files. This drive has approximately 105 GB of storage capacity.

Use drives C, E, and F strictly for Niagara 2120 operational programs. Any modifications to these drives can permanently damage your system and void your warranty.

A better practice would be to use the Flash Media server to save a file or to save it to a remote drive. If you inadvertently fill all available space, you risk losing your stream during a streaming event.

H.264 Settings Tab

Figure 29. H.264 Settings Tab

[Video](#) [Audio](#) [Output](#) **H.264 Settings** [Submit](#)

Advanced H.264 Encoding Settings

Use this form to optimize the H.264 encoder's settings, or select a Custom profile to use typical settings for your audience. Custom Profiles
Default

	Property	Value	Min	Max
Edit	BFramesBias	-2147483648		2147483647
Edit	BFramesMax	0		4
Edit	BFrameStrategy	-2147483648		2147483647
Edit	BitRateTolerance	0		25000000
Edit	BlurComplexity	-2147483648		2147483647
Edit	ChromaOffset	-2147483648		2147483647
Edit	CodecFlags	-2147483648		2147483647
Edit	CodecFlags2	-2147483648		2147483647
Edit	CoderType	0		4
Edit	DirectMVPrediction	0		3
Edit	GopSize	0		4000

1 2 3

Note: Advanced settings affect the Encoder performance and if set incorrectly may lead to abnormal operations. [Restore Defaults](#)

[View All Encoders](#) [Delete This Encoder](#) [Manage Groups](#)

Table 17. Configuring H.264 Settings

Step	Action
1.	Click Edit next to the setting you want to modify.
	<p>IMPORTANT! These advanced settings affect the way the Encoder performs and if set incorrectly may lead to abnormal encoder operations. Refer to <i>Appendix: Advanced Settings for H.264</i> for suggested values for the type of video you are streaming.</p>
2.	Change the value.
3.	Click Update .
4.	Click the Restore Defaults link at the bottom of the window to return the settings to the defaults.
	<p>NOTE: The database has seven profiles. Clicking Restore Defaults for one profile will change <i>all</i> profiles back to the default settings.</p>

Viewing Encoder Groups

Encoder groups represent the cornerstone for streaming on the Niagara 2120. The Niagara 2120 comes with one default encoder (Flash) and one profile for that encoder type. You must have at least one group assigned on the Niagara 2120 and one encoder profile assigned to that group.

The **Encoder Groups** window (Figure 30), a subset of **Encoders** (on the home page), allows you to view the list of encoder groups available for assignment to the Niagara 2120. Click **Encoders** ➤ **Groups** from the menu bar on the home page.

Figure 30. Encoder Groups List

Encoder Groups

This page allows management of Encoder Groups. You can assign one or more encoders to an Encoder Group, then assign that group to the front panel Stream button of the Niagara 2120. Each Encoder can be assigned to one or more Groups.

Note: Only one group can be Active (assigned to the **Stream button**) at a time. With each Encoder started, more system resources (CPU cycles) are consumed. It is recommended that the total CPU threshold not exceed an average of 80%.

Encoders assigned to a Group should not use the same Video Input Device. (Video Input Devices are virtual channels created by SimulStream, where one physical video input is virtualized into multiple independent video input "devices"). Also, if two encoders try to use the same port number at the same time, an error will occur.

CPU:02%
[Create New Group](#)

Niagara 2120 Total Groups: 1

Groups	Active	Assigned Encoders	Start	Stop
Edit Delete Default Group	Active	FLASH	Start	Stop

[View All Encoders](#)

Table 18. Encoder Groups Window

Field	Description
CPU	Indicates the CPU usage.
Create New Group	Allows you to create a new group.
Total Groups	Indicates the total number of groups on the Niagara 2120.
Edit	Allows you to edit a group.
Delete	Allows you to delete a group.
Groups	Displays the name of the group.
Active	Indicates which encoder group is active.
Assigned Encoders	Indicates the encoder assigned to this group.
Start	Allows you to start this group.
Stop	Allows you to stop this group.

Starting an Encoder Group

To start an encoder group, click the **Start** link to the right in the **Start** column of the group you want to start. The encoder group will start in a few seconds. The system displays any errors on the Starting window while the group starts.

NOTE: With each encoder started, more system resources (CPU cycles) are consumed. ViewCast recommends the total CPU threshold not exceed an average of 50 %.

Stopping an Encoder Group

To stop an encoder group, click the **Stop** link to the right in the **Stop** column of the group you want to stop. The encoder group will stop in a few seconds. The system displays any errors on the Stopping window while the group stops.

Creating Encoder Groups

Encoders assigned to a group should not use the same video input device. If two encoders try to use the same port number at the same time, an error will occur.

Click the **Create New Group** link on the **Encoder Groups** window (Figure 31).

Figure 31. Assign Encoders to Groups

Encoder Groups

Enter a new group name and select the encoders you would like included in your new group.
The new group will default to the active group for the Stream button.

Group Name:

New Group

Active:

Yes

Assigned Encoders:

☐ FLASH

☐ Flash Demo

Submit

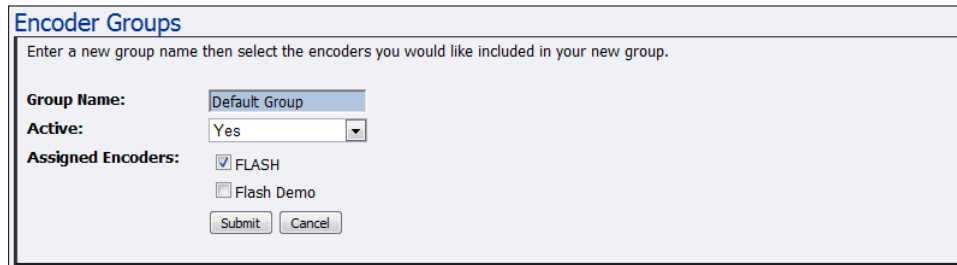
Table 19. Creating Encoder Groups

Step	Description
1.	Enter the name of the group.
2.	Click on the encoders you want to assign to the group.
3.	Click Submit .

Editing Encoder Groups

Click the **Edit** link on the **Encoder Groups** window (Figure 32).

Figure 32. Encoder Groups Window



The screenshot shows a window titled "Encoder Groups" with a light blue header. Below the header, there is a text area with the instruction: "Enter a new group name then select the encoders you would like included in your new group." Below this, there are three labeled sections: "Group Name:" with a text input field containing "Default Group"; "Active:" with a dropdown menu showing "Yes"; and "Assigned Encoders:" with two checkboxes, "FLASH" (checked) and "Flash Demo" (unchecked). At the bottom, there are "Submit" and "Cancel" buttons.


Table 20. Creating Encoder Groups

Step	Description
1.	Enter the name of the group.
2.	Click Yes or No .
3.	Click on the encoders you want to assign to the group.
4.	Click Submit .

Starting an Encoder Group With the Stream Button

Use the **Stream** button on the front panel to start the assigned encoder group. Follow the steps in Table 21 to start encoding.

Table 21. Start Encoding

Step	Action
1.	Press Stream 
2.	The video encoding status blue light displays (V) to indicate a positive video stream and the audio meters display to indicate positive audio tracking.



WARNING! Limitations exist for the number of streams you can encode simultaneously. If you attempt to encode more streams than the Niagara 2120 can process simultaneously, the streams drop frames and the video *stutters*. This results in a poor viewer experience. If you fail to reduce the number of sessions to reduce CPU load, all encoding sessions may self-terminate without warning.


Stopping Encoding

To stop the active encoding group, press the **Stop** button on the front panel. The Niagara 2120 browser displays the list of encoders and shows the status of each session.

Shutdown

To shut down the Niagara 2120 perform the steps in Table 22.

Table 22. Power Off the Niagara 2120

Step	Action
1.	Briefly press Power  on the front panel.
2.	The Niagara 2120 front panel status light starts blinking and turns off once it is ready to stop streaming.
3.	The Niagara 2120 powers off after a few seconds.

CAUTION: Allow the Niagara 2120 to power down normally. If you force the system to shut down improperly, it can corrupt your data. If so, the next time you start the system, it may take several minutes to complete startup.

Chapter 4: Perform Advanced Operations

Advanced operations include but are not limited to the following:

- Changing the computer name
- Changing the login password
- Configuring alerts
- Setting high temperature alerts
- Setting CPU thresholds
- Restoring factory defaults
- Viewing the activity log
- Viewing alerts

Configuring Niagara 2120 Properties

The Niagara 2120 **Machine Properties** window (Figure 33) provides details on software versions, network name, serial number, and hard drive configurations. Click **Configuration** ➤ **Niagara 2120 Properties** from the menu bar on the home page.

Figure 33. Machine Properties Window

The screenshot shows the 'Machine Properties' window with the following sections:

- Computer Name:** GF10061228 (with an 'Edit' link)
- Windows Version:** 5.1.2600.131072
- Service Pack:** Service Pack 2 (with a 'Reboot Now' link)
- Niagara 2120 Properties:**
 - User Name:** admin
 - Serial Number:** GF10010001
- Fixed Hard Drive:**
 - C:\: 1,307.00 MB free out of 3,065.00 MB
 - D:\: 108,004.00 MB free out of 108,543.00 MB
 - E:\: 6.00 MB free out of 199.00 MB
 - F:\: 790.00 MB free out of 2,654.00 MB
- Memory:** 504.00 MB bytes free out of 1,014.00 MB
- CPU Usage:** CPU:02%
- Software Versions:**
 - Web: 6.1.228.2
 - SKU#: 92-00380-02
- Software Update History:** - None

At the bottom, a note states: 'Note: Changing the computer name will require the system to be rebooted after submitted.'

Most of the data on this window provides information only and users cannot alter it. However, you can modify two fields:

- Computer name
- Admin password

Changing Computer Name

The **Computer Name** field contains the current network name for the Niagara 2120. This name is the same name you typed into the Web browser to access the Niagara SCX Web interface.

Table 23. Changing Computer Name

Step	Action
------	--------

1. Click the Edit link next to the Computer Name field (Figure 34).

Figure 34. Computer Name Field

Computer Name:

GF10061228

Windows Version:

5.1.2600.131072

Service Pack:

Service Pack 2

[Reboot Now](#)

2. The screen refreshes and the Computer Name field becomes an editable text field. Type in a new name for the Niagara 2120.
3. Click **Submit** at the bottom of the page.

Figure 35. Reboot Message

Machine Properties

Computer name changed.

Please reboot the system to apply the changes. [Click to Reboot Now](#)

Computer Name:

Company

Windows Version:

5.1.2600.131072

Service Pack:

Service Pack 2

NOTE: The page refreshes, and the system prompts you to reboot the Niagara 2120. Your changes do not take effect until the system restarts (Figure 35).

4. Click the **Click to Reboot Now** link to restart the system and apply the Computer Name change.

NOTE: The restart process takes approximately two minutes to complete.

When the Niagara 2120 restarts, use the new system name in the IE browser URL to return to the **Login** window.

If you close your Web browser and later want to log into the Web interface, you must use the new computer name you created or the IP address of the appliance to access the Niagara 2120.

Changing the Login Password From the Factory Default

The Niagara 2120 Properties section has two fields: **User Name** and **Serial Number**. You can only change the **User Name** field, which changes the **User Password** from the factory default (Figure 36).

Figure 36. Properties Section

Niagara 2120 Properties:

User Name:

[admin](#)

Serial Number:

GF10010001

Table 24. Changing Login Password

Step	Action
1.	Click the admin link in the User Name field.

NOTE: The system displays a new window (Figure 37) that allows you to change your login password for the Web interface.

Figure 37. Password Change Window

Change your password for the
Niagara 2120 web login.

Passwords are case sensitive

Change Your Password

User Name:

admin

Password:

New Password:

Confirm New Password:

Change Password

Cancel

[Back to home page](#)

NOTE: You cannot change the **User Name** for the Web interface from this window.

2. Type your current password in the **Password** field. Continue by typing your desired new password in both the **New Password** and **Confirm New Password** fields. The Web

Step	Action
	interface password is case sensitive.
3.	Click the Change Password button. The system displays a confirmation page. You must log back into the Web interface with your password.

Restoring the Login Password to the Factory Default

If you forget or lose your password, you can restore the default password by running the **Restore Niagara 2120 Factory Defaults** option. For more information, see *Restore Niagara 2120 Factory Defaults* in the *System Configuration* section later in this chapter.

Configuring Alerts

Click **Configuration** ➤ **Alerts** from the menu bar on the home page. The Alerts window (Figure 38) allows you to configure alerts for different situations that may occur during streaming or other operations.

Figure 38. Alerts Window

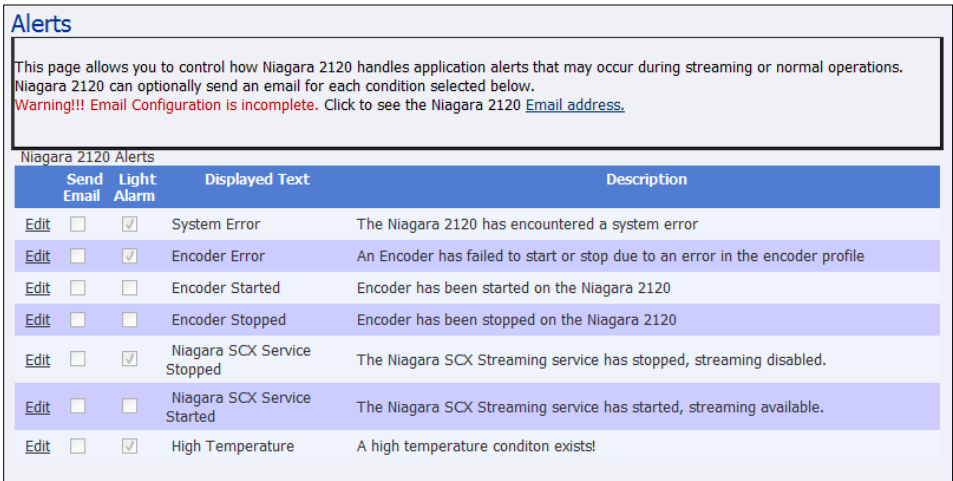


Table 25. Configuring Alerts

Field	Description
Email Address	Click this link to configure email settings on the System Configuration Settings window.
Edit	Click the Edit link next to the alert you want to change settings on.
Send Email	Click the Send Email checkbox to send an email to multiple recipients should an alarm occur. NOTE: You can optionally send an email alert to specific email address in the event of an application alarm. You must specify the email address where you want an alert sent, along with your email server user name, password, and server name. For more information about configuring the Niagara 2120 to send email alerts, see the <i>System Configuration</i> section.
Light Alarm	Click the Light Alarm checkbox. The alarm light on the front panel of the Niagara 2120 will automatically light when an alarm condition exists.
Displayed Text	Displays the type of alert.
Description	Provides a description of the type of alert.

Configuring Network Properties

The **Network Properties** window (Figure 39) provides detailed information on the current network settings for the Niagara 2120 **Network Cards**. Click **Configuration** ➤ **Network Properties** from the menu bar on the home page.

Figure 39. Network Properties

(TCP/IP) Network Properties

Network Card(s) Local Area Connection

Description: Intel(R) 82566MM Gigabit Network Connection - Packet Scheduler Miniport

☒ Obtain an IP address automatically
☐ Use the following IP information

IP Address: 172.16.8.115
 Subnet Mask: 255.255.255.0
 Default Gateway: 172.16.8.1
 Preferred DNS Server: 172.16.1.3
 Alternate DNS Server: 216.136.95.2

Advanced Settings on GF10061228

MAC Address: 00:D0:C9:AC:65:86
 Primary WINS Server: 0.0.0.0
 Secondary WINS Server: 0.0.0.0
 Active Network Link:

Submit Reset

Configuring Network Card(s)

The Niagara 2120 has two Gigabit network connections available on the **Network Properties** window, **Network Card(s)** field). Select the card you wish to view from the drop-down menu in the **Network Card(s)** field (Figure 40) to view the current properties for each card.

Figure 40. Network Card Options

Network Card(s) Local Area Connection 4

Description: Local Area Connection 3

Configuring IP Address

Depending on your system configuration, you may need to configure the **IP Address** (Figure 41).

Figure 41. IP Address

☐ Obtain an IP address automatically

☒ Use the following IP information

IP Address:

172.16.8.115

Subnet Mask:

255.255.255.0

Default Gateway:

172.16.8.1

Preferred DNS Server:

172.16.1.3

Alternate DNS Server:

216.136.95.2

Table 26. Configuring IP Address

Step	Action
1.	Click the Use the following IP information checkbox.
2.	Enter the appropriate information in the IP Address, Subnet Mask, Default Gateway, Preferred DNS Server and Alternate DNS Server fields.
3.	Click Submit .

Configuring Advanced Settings (Network)

Advanced network settings provides the Niagara 2120 network name, MAC Address, and server IP address settings (Figure 42).

Figure 42. Advanced Settings

Advanced Settings on

GW09060012

MAC Address:

00:D0:C9:AE:59:23


Primary WINS Server:

172.16.1.4

Secondary WINS Server:

0.0.0.0

Active Network Link:





Submit

Reset

The Niagara 2120 network name (**GW09060012**) is a link. If you click this link, the system transfers you to the Machine Properties window. From this window, you can change the name of the Niagara 2120.

The **Active Network Link** field uses one of two icons (Table 27) to indicate whether the network interface card selected has a network connected.

Table 27. Network Links

Network Link Icon	Description
	The system detects the network link.
	The system does NOT detect the network <i>link</i> .

System Configuration Settings

The **System Configuration Settings** window (Figure 43) allows you to modify your Niagara 2120 default system settings. You can configure email settings to enable Niagara 2120 to send an email to predefined email addresses any time the Niagara 2120 encoder encounters an alert condition. You can also customize the information the Niagara 2120 displays on its front panel when the system exists in idle mode.

This window also allows you to restore your Niagara 2120 to its original factory disk image and return all the system settings to their original states. Using the **Restore Niagara 2120 Factory defaults** option removes all custom settings. It takes approximately 15 to 40 minutes to complete.

Click **Configuration** ➤ **System Configuration** from the menu bar on the home page.

Figure 43. System Configuration

System Configuration Settings
 This page allows you to modify your Niagara 2120 default system settings.
 Enter valid email settings to have Niagara 2120 send emails for alert conditions. [Restore Niagara 2120 Factory defaults](#)

Current System Configuration:
 Current Time: Hour 4 Minutes 54 PM [Change Date: 2/4/2010](#)
 Video Standard: NTSC for all Encoders.

Email Settings:
 Send Emails To:
 Email From:
 Subject: System Status Report on GF10061228

SMTP (Mail) Settings:
 User Name:
 Password:
 SMTP Host: [Save and Send Test Email](#)

Default AV Folder: D:\AVFiles ☐ Apply folder to all encoders.

High Temperature Alert: 60 degrees Celsius. (View [Alert Configuration](#)) [Generate Test Alert](#)

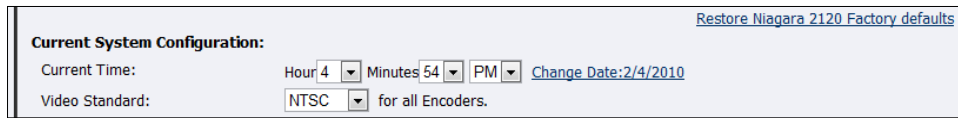
Encoder Startup Settings:
 CPU Threshold: Start an Encoder when the CPU is below Disabled % Optional settings
 CPU Threshold Timeout: Wait 5 seconds for the CPU to fall below the threshold before starting encoders.

SimulStream Settings: Show 5 filters per video device.

Setting Current System Configuration

You can set the current time, date, and the video standard for all encoders (Figure 44).

Figure 44. Current System Configuration



[Restore Niagara 2120 Factory defaults](#)

Current System Configuration:

Current Time: Hour: 4 Minutes: 54 PM [Change Date: 2/4/2010](#)

Video Standard: NTSC for all Encoders.

Table 28. Setting Current System Configuration

Step	Action
1.	Click the Hour in the drop-down list.
2.	Click the Minutes in the drop-down list.
3.	Click AM and PM in the drop-down list.
4.	Click the Change Date link. A calendar appears.
5.	Click the date on the calendar.
6.	Click the Video Standard from the drop-down list.
7.	Click Submit .

Configuring Email Settings

Figure 45. Email/SMTP Setting Fields

Email Settings:

Send Emails To:

support@viewcast.com

Email From:

Subject:

System Status Report on GW09330012

SMTP (Mail) Settings:

User Name:

Password:

SMTP Host:

[Save and Send Test Email](#)

Table 29. Setting Current System Configuration

Step	Action
1.	Enter the email address you want the system to send the email. Separate multiple email addresses with a comma.
2.	Enter a valid originating email address.
3.	Enter a subject line for your email alert.
4.	Enter the SMTP user name for server access.
<div><div>NOTE:</div> If you are unfamiliar with setting up an SMTP Email account for sending email, contact your network administrator for assistance.</div>	
5.	Enter the password if required.
<div><div>NOTE:</div> For security purposes, the password for your account does not display once the system enters it into the Niagara 2120 settings. Although this field appears blank after you click Submit, the system retains the password information.</div> <div>If you change any information in this dialog box, you need to re-enter your SMTP password before clicking Submit. Not doing so overwrites the previously entered password with a blank entry.</div>	
6.	Enter the name of the SMTP server.
7.	Click the Save and Send Test Email to test your settings. The resulting window reports the email as successful or it sends information that a send failure occurred.
8.	Click Submit .

Configuring Default Directory Setting

The Niagara 2120 stores AV files when you click the Save to File option in the encoder profile in the Default AV folder. Refer to the **Save to File** option under the Flash Encoder Properties (Figure 46) sections for information on setting an encoder profile to create an AV file.

NOTE: ViewCast strongly recommends you do not alter the default directory setting unless you understand the risk of saving your files to a directory not located on the D: drive. If you save your files to another drive on the Niagara 2120, the system could delete the files when you use the Restore to Niagara 2120 Factory Defaults feature.

Only drive D on the Niagara 2120 has available storage to save your files. This drive has approximately 105 Gigabytes of storage capacity.

Use drives C, E, and F strictly for the Niagara 2120 operational programs. Any modifications to these drives can permanently damage your system and void your warranty.

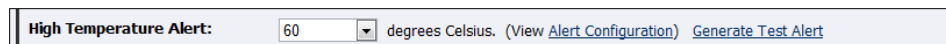
Figure 46. Default AV Folder Field

The screenshot shows a configuration field labeled "Default AV Folder:". To the right of the label is a text box containing "D:\AVFiles" and a small button with three dots. Further to the right is a checkbox labeled "Apply folder to all encoders.".

Setting the High Temperature Alert

The **Alert Configuration** links to the **Niagara 2120 Alerts** window (Figure 47). Refer to pertinent previous sections in this user guide for information on setting the **Niagara 2120 Alerts**.

Figure 47. High Temperature Alert

The screenshot shows a configuration field labeled "High Temperature Alert:". To the right of the label is a text box containing "60" and a drop-down arrow. To the right of the text box is the text "degrees Celsius." followed by two links: "(View Alert Configuration)" and "Generate Test Alert".

You can enable an alert if the Niagara 2120 reaches a predefined maximum temperature level. To set the temperature level, click an option from the drop-down menu (Figure 48).

Figure 48. Drop-Down Temperature Setting Options

The screenshot shows a web interface with a dropdown menu open. The menu lists temperature values in degrees Celsius: Disabled, 50, 55, 60, 65, 70 (highlighted), 75, 80, 85, 90, 95, and 100. The background shows settings for 'High Temperature Alert' (Disabled), 'Encoder Startup Settings' (CPU Threshold: 50, CPU Threshold Timeout: 60), and 'SimulStream Settings' (70 filters per video device).

Setting CPU Thresholds

You may set the **CPU Threshold** field (Figure 49) to accommodate optimal encoding capabilities. You also may set the time between repetitive intervals for checking the CPU threshold.

Figure 49. Encoder Startup Settings

The screenshot shows the 'Encoder Startup Settings' section. It includes a 'CPU Threshold' field set to 50% and a 'CPU Threshold Timeout' field set to 30 seconds. The text indicates that the encoder will start when the CPU is below the threshold and will wait for the specified timeout before starting encoders.

The screenshot shows the 'Current System Configuration' page. A dropdown menu for the 'CPU Threshold' is open, showing values from 1 to 100. The '50' value is highlighted. The background shows various system settings including 'Current Time', 'Video Standard', 'Email Settings', 'SMTP (Mail) Settings', 'Default AV Folder', and 'High Temperature Alert'.

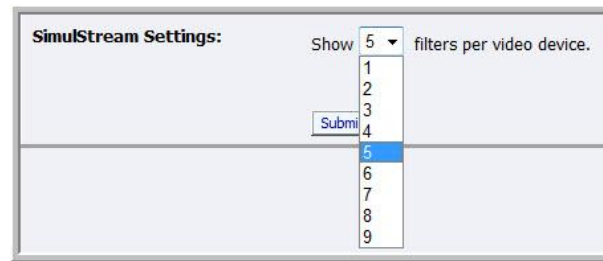
NOTE: ViewCast recommends a CPU threshold setting of 50% or lower.

Setting SimulStream Filters

You may indicate the number of SimulStream filters per video device using the SimulStream Settings field (Figure 50).

Figure 50. SimulStream Settings

The screenshot shows the 'SimulStream Settings' section. It includes a 'Show' field set to 5 filters per video device. A 'Submit' button is located below the field.



Restoring Niagara 2120 Factory Defaults

Restore to Factory Defaults allows you to restore drive C to its original factory system defaults. This action removes all data (including stored files) on the primary drive and reinstalls the original factory image.

CAUTION Select this option only if you wish to return your system to its factory defaults. Selecting this option erases all data currently stored on drive C and stops all currently running programs. Remove any USB memory device before performing a Factory Restore.

This operation takes approximately 15 to 45 minutes to complete. Do *not* power off or interrupt the system restore once it starts. All services automatically restart when the system restore completes. You may then use the Niagara 2120 Web interface tool to reset the time, date, and video format.

Click the **Restore Niagara 2120 Factory defaults** link on the **Configuration** ➤ **System Configuration Settings** window to start the process (Figure 51).

Figure 51. Restore Factory Defaults

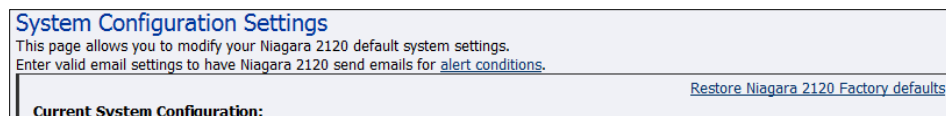
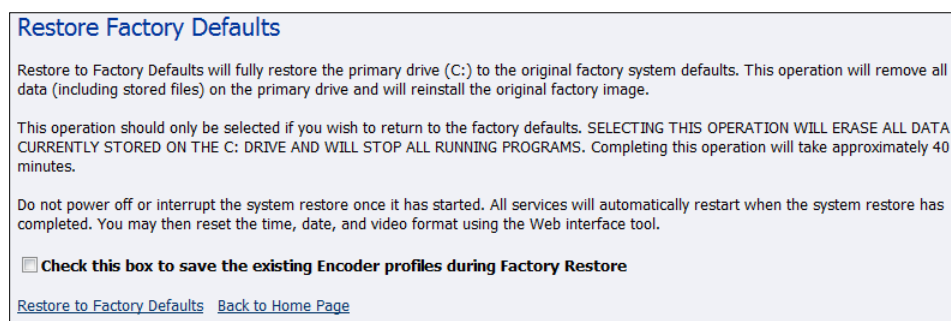


Figure 52 provides you details regarding the process you are about to execute and allows you the opportunity to cancel the process by clicking **Back to Home Page**.

Figure 52. Restore Factory Defaults



NOTE: Restore to Factory Defaults rebuilds the Niagara 2120 primary disk drive C with the original system image. You lose all custom settings and any files saved to drive C. You cannot reverse this process. However, you can manually re-enter your custom settings once the Niagara 2120 restore process completes.

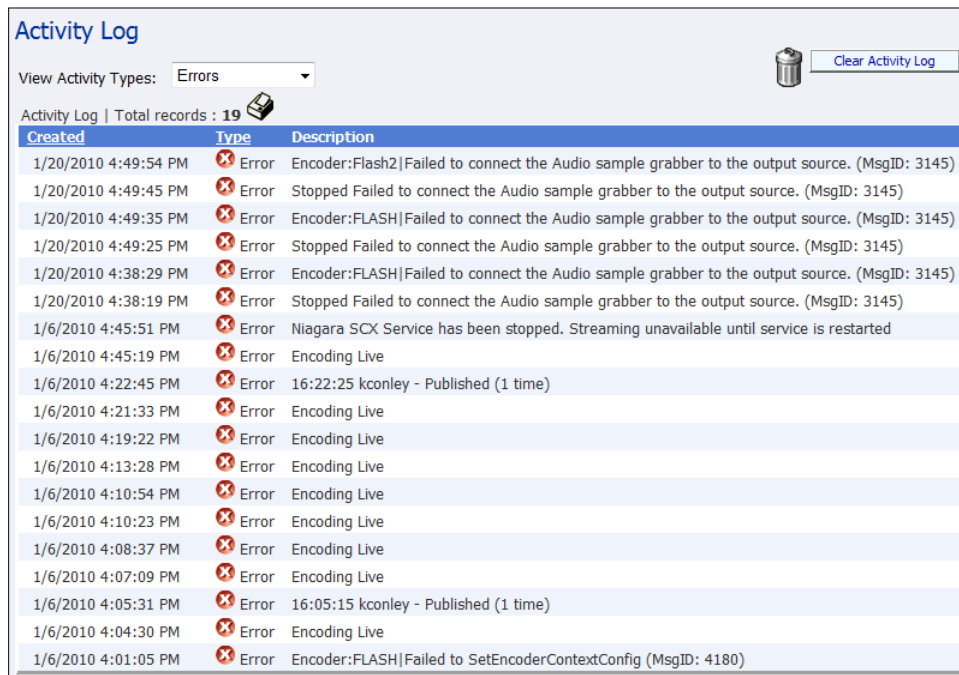
Use the default directory, D:\AV Files\, for saving your audio and video files. The system only re-images drive C when you use the **Restore to Factory Defaults** option. It preserves all files and folders on drive D. Always use the default directory – drive D – for storage of personal files to ensure the system does not remove your personal files.

WARNING! Remember that the system deletes all previously stored encoder profiles and groups when you restore it to its factory defaults.

Viewing the Activity Log

The Activity Log records the encoder Start and Stop events. The system updates the log for every event including the date and time. To view the activity log, on the home page click **Status** ➤ **View Activity Log**.

Figure 53. Activity Log Window



The screenshot shows the 'Activity Log' window. At the top, there is a dropdown menu for 'View Activity Types' set to 'Errors' and a 'Clear Activity Log' button with a trash icon. Below this, it says 'Activity Log | Total records : 19' with a printer icon. The main part of the window is a table with three columns: 'Created', 'Type', and 'Description'. The table contains 19 rows of log entries, all of which are errors. The descriptions include messages about failed audio sample grabber connections, encoding live status, and service restarts.

Created	Type	Description
1/20/2010 4:49:54 PM	Error	Encoder:Flash2 Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/20/2010 4:49:45 PM	Error	Stopped Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/20/2010 4:49:35 PM	Error	Encoder:FLASH Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/20/2010 4:49:25 PM	Error	Stopped Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/20/2010 4:38:29 PM	Error	Encoder:FLASH Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/20/2010 4:38:19 PM	Error	Stopped Failed to connect the Audio sample grabber to the output source. (MsgID: 3145)
1/6/2010 4:45:51 PM	Error	Niagara SCX Service has been stopped. Streaming unavailable until service is restarted
1/6/2010 4:45:19 PM	Error	Encoding Live
1/6/2010 4:22:45 PM	Error	16:22:25 kconley - Published (1 time)
1/6/2010 4:21:33 PM	Error	Encoding Live
1/6/2010 4:19:22 PM	Error	Encoding Live
1/6/2010 4:13:28 PM	Error	Encoding Live
1/6/2010 4:10:54 PM	Error	Encoding Live
1/6/2010 4:10:23 PM	Error	Encoding Live
1/6/2010 4:08:37 PM	Error	Encoding Live
1/6/2010 4:07:09 PM	Error	Encoding Live
1/6/2010 4:05:31 PM	Error	16:05:15 kconley - Published (1 time)
1/6/2010 4:04:30 PM	Error	Encoding Live
1/6/2010 4:01:05 PM	Error	Encoder:FLASH Failed to SetEncoderContextConfig (MsgID: 4180)

Table 30. Activity Log Fields

Fields	Description
View Activity Types	Select the types of activity you wish to view. Options include: <ul style="list-style-type: none"> • Show All • General • Errors • Warnings
Clear Activity Log icon	Click this link to clear all logged activities.
Total records	Indicates the number of records for the selected view type.
Printer icon	Click the icon for a print view of the activity log. When the print friendly view appears, click File ➤ Print to print a hard copy or save a soft copy of the Activity Log.
Created	Displays the system date and time stamps for each event.
Type	Indicates the type of activity.

Fields	Description
Description	Displays a description of the activity.

Viewing Alerts

Click **Status** ➤ **View Alerts** from the home page. The Alerts Window updates with every alert event on the Niagara 2120. The alerts include any specific alert events for the encoder.

Figure 54. Alerts Window

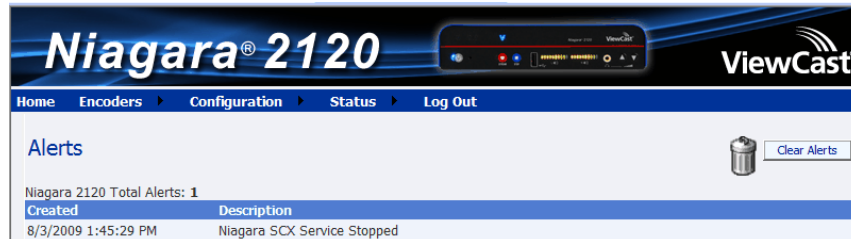


Table 31. Alert Fields

Alert Fields	Description
Clear Alerts icon	Click this icon to clear all alerts.
Total Alerts	Indicates the number of alerts.
Created	Displays the date and time the alert occurred.
Description	Displays the message ID number for the alert and the description.

Connecting an External Storage Device

The Niagara 2120 provides two USB ports, one on the front panel and one on the rear panel. You can connect almost any standard USB memory device to one or both of these ports. This allows you to export any AV files you created on the local storage drive of the Niagara 2120. The encoder defaults to set the local storage drive D when you use the **Save to File** setting with the Niagara 2120 Web interface.

When you insert a USB memory device in one of the USB ports on the Niagara 2120, the Niagara 2120 automatically detects the removable storage device, and assigns a drive letter to the device. Use standard Windows methods to transfer AV files from drive D to the attached USB device.

Using the Niagara SCX Interface

You may wish to perform even more advanced setup and operations. To do so, you may choose to access the **Niagara SCX** interface. You may access the Niagara SCX interface through a remote desktop by connecting a monitor, keyboard, and mouse to the Niagara 2120 or by installing the Niagara SCX Explorer on a remote computer. Use the *Niagara SCX User Guide* for specific information on how to use the Niagara SCX and the Niagara SCX Explorer software.

Appendix: Advanced Settings for H.264

In general, the default values (Table 32) for the H.264 encoder will meet your streaming requirements. For devices with restricted bandwidths and under certain conditions such as low bit rates, motion specific, or constant bit rate applications, you may need to adjust the advanced settings. This section includes several examples to assist you in the selection of advanced variables. These examples are suggestions and you should understand and select the appropriate values for your streaming application. Refer to Table 40 for a definition of the setting variable.

Table 32. Default Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
DirectMVPrediction	1
GOPSize	250
GOPSizeMin	25
IFrameQuantFactor	0.71
InLoopDeblockingFilterAlpha	0
InLoopDeblockingFilterBeta	0
Level	12
MotionEstimationMethod	7
MotionEstimationRange	16
MotionEstimationSubPelQuality	7
MotionEstimationSubPixelComparison	0
NoiseReduction	0

Setting	Value
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	4
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.6
ReferenceFrames	2
SceneChangeDetectThreshold	45
TrellisRDQuantization	0

You can change the default settings according to the type of video you are streaming in constant bit rate (CBR), mobile, or variable bit rate (VBR):

- CBR - Newscast
- CBR - Sports
- CBR - Action
- Mobile
- VBR – Newscast
- VBR – Sports
- VBR - Action

CBR – Newscast

Newscast type content has low motion and some scene changes.

Table 33. CBR – Newscast Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	41496352
CodecFlags2	131328
CoderType	0
DirectMVPrediction	1
GOPSize	300
GOPSizeMin	30
IFrameQuantFactor	0.71
InLoopDeblockingFilterAlpha	0
InLoopDeblockingFilterBeta	0
Level	12
MotionEstimationMethod	7
MotionEstimationRange	8
MotionEstimationSubPelQuality	7
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	16
QuantizerMin	12
QuantizerScaleBlueOverTime	0.5
QuantizerScaleCompress	0.3
ReferenceFrames	6
SceneChangeDetectThreshold	45

Appendix: Advanced Settings for H.264

Setting	Value
TrellisRDQuantization	0

CBR – Sports

A sports event sequence is a typical representation of a sports game.

Table 34. CBR – Sports Settings

Setting	Value
BFramesBias	0
BFramesMax	0
bFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
DirectMVPrediction	1
GOPSize	400
GOPSizeMin	40
InLoopDeblockingFilterAlpha	1
InLoopDeblockingFilterBeta	1
Level	12
MotionEstimationMethod	7
MotionEstimationRange	8
MotionEstimationSubPelQuality	7
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	16
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.5
ReferenceFrames	6
SceneChangeDetectThreshold	55

Setting	Value
TrellisRDQuantization	0

CBR – Action

An action movie sequence has a lot of lasers, explosions, bright lights flickering, dust, and scene changes.

Table 35. CBR – Action Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
DirectMVPrediction	1
GOPSize	350
GOPSizeMin	35
IFrameQuantFactor	-0.8
InLoopDeblockingFilterAlpha	2
InLoopDeblockingFilterBeta	1
Level	12
MotionEstimationMethod	7
MotionEstimationRange	8
MotionEstimationSubPelQuality	7
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	8
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.6
ReferenceFrames	6

Setting	Value
SceneChangeDetectThreshold	45
TrellisRDQuantization	0

Mobile

Table 36. Mobile Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
DirectMVPrediction	1
GOPSize	300
GOPSizeMin	30
IFrameQuantFactor	-0.71
InLoopDeblockingFilterAlpha	2
InLoopDeblockingFilterBeta	1
Level	11
MotionEstimationMethod	7
MotionEstimationRange	8
MotionEstimationSubPelQuality	7
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	16
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.3
ReferenceFrames	2
SceneChangeDetectThreshold	50

Setting	Value
TrellisRDQuantization	0

VBR – Newscast

Table 37. VBR – Newscast Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
ConstantRateFactor	22
DirectMVPrediction	1
GOPSize	300
GOPSizeMin	25
IFrameQuantFactor	0.71
InLoopDeblockingFilterAlpha	-1
InLoopDeblockingFilterBeta	-1
Level	12
MotionEstimationMethod	7
MotionEstimationRange	16
MotionEstimationSubPelQuality	8
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	4
QuantizerMin	12
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.6
ReferenceFrames	6
SceneChangeDetectThreshold	45

Appendix: Advanced Settings for H.264

Setting	Value
TrellisRDQuantization	0

VBR – Sports

Table 38. VBR – Sports Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
ConstantRateFactor	22
DirectMVPrediction	1
GOPSize	250
GOPSizeMin	25
IFrameQuantFactor	-0.8
InLoopDeblockingFilterAlpha	1
InLoopDeblockingFilterBeta	1
Level	12
MotionEstimationMethod	7
MotionEstimationRange	16
MotionEstimationSubPelQuality	8
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	4
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.6
ReferenceFrames	6
SceneChangeDetectThreshold	65

Appendix: Advanced Settings for H.264

Setting	Value
TrellisRDQuantization	0

VBR – Action

Table 39. VBR – Action Settings

Setting	Value
BFramesBias	0
BFramesMax	0
BFramesStrategy	0
BitRateTolerance	1
BlurComplexity	20
ChromaOffset	0
CodecFlags	4196352
CodecFlags2	131328
CoderType	0
ConstantRateFactor	22
DirectMVPrediction	1
GOPSize	300
GOPSizeMin	30
IFrameQuantFactor	-0.71
InLoopDeblockingFilterAlpha	1
InLoopDeblockingFilterBeta	0
Level	12
MotionEstimationMethod	7
MotionEstimationRange	16
MotionEstimationSubPelQuality	8
MotionEstimationSubPixelComparison	0
NoiseReduction	0
QuantizerMax	51
QuantizerMaxDiffBetweenFrames	4
QuantizerMin	10
QuantizerScaleBlurOverTime	0.5
QuantizerScaleCompress	0.6
ReferenceFrames	4
SceneChangeDetectThreshold	85

Appendix: Advanced Settings for H.264

Setting	Value
TrellisRDQuantization	0

Settings

Table 40 provides an explanation of each setting and its function.

Table 40. Explanation of Settings

Setting	Explanation
BitRateTolerance	Setting the bit rate tolerance tells the encoder it must hit the target bit rate almost exactly. However, this value can have an adverse effect on quality because you are forcing the encoder to stay at a target bit rate. More heavy frames may not get enough bits to make the image look better while less heavy frames get more than they need. As a result, the quality may vary. If you set the value to 1 , the encoder uses 0.01.
DirectMVPrediction	The default setting is temporal . Temporal breaks when b-pyramid is applied. As a result, it is easy to mix the two improperly. Spatial is a better default.
GOPSize	This value sets the maximum interval between IDR frames. Theoretically, higher values improve compression because IDR frames are the heaviest, but it can also reduce the appearance of fluctuating quality.
GOPSizeMin	This value sets the minimum length between IDR frames. This setting limits the minimum length after each IDR frame before another can be placed.
InLoopDeblockingFilterAlpha	<p>This value affects the overall amount of deblocking applied to the picture. Higher values deblock more efficiently, but retain less detail causing the image to appear softened.</p> <p>The default value is 0 and should be sufficient to eliminate most blocking, but it leaves the picture noticeably blurrier. In general, values should be no lower than -3 and no higher than 3. This value is the most important parameter in determining the overall sharpness of your encode.</p>
InLoopDeblockingFilterBeta	This value determines whether something in a block is or is not a detail when deblocking is applied. Lower values apply less deblocking to more flat blocks with detail present and more deblocking to blocks without detail. Higher values cause more deblocking to be applied to less flat blocks with details present. Raising the value of Beta deblocking is a good way to get rid of ringing artifacts by applying more aggressive filtering to blocks that aren't very flat. Lowering the value of Beta deblocking is a good way to reduce the amount of DCT blocks without blurring the entire picture.
MotionEstimationMethod	This value sets the quality. It determines the motion detection method (5 is dia, 7 is hex, 8 is umh, 2 is esa, 10 is teas).

Setting	Explanation
	<p>Because teas (10) is not achievable in real time encoding there is no reason to use it.</p> <p>dia – (diamond) is the simplest search. It starts at the best predictor, checks the motion vectors at one pixel upwards, left, down, and to the right, chooses the best, and repeats the process until it no longer finds any better motion vectors. This setting is the fastest.</p> <p>hex – (hexagon) is the default setting. It uses a similar strategy to dia, except it uses a range-2 search of 6 surrounding points. It is considerably more efficient than dia and hardly any slower. This setting is a good choice for general use.</p> <p>umh – (uneven multi-hex) is considerably slower than hex. It searches a complex multi-hexagon pattern to avoid missing harder-to-find motion vectors. umh is about 40 % slower than hex.</p> <p>esa – (exhaustive) is a highly optimized intelligent search of the entire motion search space within range of the best predictor. It is the mathematically equivalent to the brute force method of searching every single motion vector in that area, though faster. It is still considerably slower than umh.</p> <p>teas – (transformed exhaustive) attempts to approximate the effect of running a Hadamard transform comparison at each motion vector. It's a little bit better than esa but a little bit slower, too slow for practical use.</p>
MotionEstimationRange	<p>This value controls the maximum range of the motion search. For hex and dia, the encoder only uses between 4 and 16. umh and esa allow you to increase past 16 to allow a wider range of motion search, which is useful for high-definition footage and for high-motion footage. Increasing MotionEstimationRange significantly slows down encoding.</p>
MotionEstimationSubPelQuality	<p>This value controls the subpixel motion estimation quality. Higher numbers are better. Levels 1 through 5 simply control the subpixel refinement strength. Level 6 enables RDO for mode decision, and level 8 enables RDO for motion vectors and intra prediction modes. RDO levels are significantly slower than the previous levels.</p> <p>0 — fullpel only (not recommended)</p> <p>1 — QPel SAD 1 iteration</p> <p>2 — QPel SATD 2 iterations</p> <p>3 — HPel on MB then Qpel</p> <p>4 — Always Qpel</p> <p>5 — Multi QPel + bime</p>

Setting	Explanation
	<p>6 — RD on I/P frames</p> <p>7 — RD on all frames</p> <p>8 — RD refinement on I/P frames</p> <p>9 — RD refinement on all frames</p> <p>10 — QP-RD (requires trellis=2, aq-mode >0)</p>
QuantizerMax	<p>The default setting is 31. This value sets the maximum for the quantizer. 51 is the highest quantizer available for use in the H.264 specification and is very low quality.</p> <hr/> <p>IMPORTANT! For low bit rates you want to keep constant, it is recommended that you use the default setting of 51 and not 31.</p> <hr/>
QuantizerMaxDiffBetweenFrames	<p>This value determines the maximum change quantizer between two frames. The purpose is to reduce the possibility of any large quality jumps in the output video. It is better to slow this change over a few frames rather than all at once. 4 is good, however if you don't want to see big jumps in bit rates and don't mind big jumps in quality, you can increase the value to 8 or 16.</p>
QuantizerMin	<p>This value sets the minimum quantizer you will ever use. The lower the quantizer the closer it is to its input. For most video, anything below 10 is perceptually lossless. Anything below the default of 8 is definitely lossless.</p> <hr/> <p>IMPORTANT! Raising gpm in higher than its default of 16 is strongly discouraged because this could reduce the quality of flat background areas of the frame.</p> <hr/>
QuantizerScaleCompress	<p>The default setting is 0.60. Use this value to trade off the number of bits allocated to “expensive” high-motion versus “cheap” low-motion frames.</p> <p>At one extreme, a setting of 0.0 aims for true constant bit rates. Typically with high-motion scenes, this setting tends to look bad. If you use low bit rates, however, low motion scenes appear perfect but use more bits than needed.</p> <p>The other extreme setting of 1.0 aims to achieve constant quantization, however this setting throws many bits at high-motion scenes, and a lot less at low-motion scenes which can cause the bit rate to fluctuate. 0.50 performs well on sports, 0.60 on action content, while 0.30 works well with news broadcasts. 0.2 works well with drama-type movies, soap operas, and shows.</p>

Setting	Explanation
ReferenceFrames	This value is the number of previous frames each P-frame can use as a reference. Recommended value is around 4 to 8 . Each increase has reduced benefit and constant speed loss with higher CPU usage. However, 16 can be helpful for animated content, video game capture, CGI, and other similar content.
SceneChangeDetectThreshold	0 turns off scene change detection. Higher values of scenecut increase the number of scenecuts detected. A good default is 40 . IMPORTANT! Lowering the default causes less scene detections so it would use less IDR frames. Those are expensive heavyweight frames.

Other Settings

Table 41. Other Settings

Setting	Explanation
BlurComplexity	Apply a Gaussian blur with the given radius to the quantizer curve. This value means the quantizer assigned to each frame blurs temporally with its neighbors to limit quantizer fluctuations.
BQuantFactor	This value sets the targets average reduction in bit rate for B-frames as compared to P-frames. Higher values increase the quality of B-frames. This value makes them better references, which can improve the overall image quality. The problem is that the extra bits taken by the B-frames are from the P-frames, which makes this variable a balancing act.
BQuantOffset	This value is the quantizer scale offset between I-P-B-frames.
ChromaOffset	The encoder normally encodes all 3 color planes (luma, U (chroma), V (chroma)) at the same quantizer. The system adds this value to the quantizers for the U and V planes. This value allows you to bias the encode in favor of brightness (luma) by setting positive values (chroma fields will have higher quantizers), or in favor of color (chroma) by setting negative values (chroma fields will have lower quantizers).
<p>NOTE: The encoder only encodes the luma and chroma planes at the quantizer up to quantizer 29. After this, chroma is quantized progressively by a lower amount than luma until you end with luma at quantizer 51. This behavior is not adjustable, as it is required by the H.264 standard.</p>	
ConstantQuantizationRateControl	This value sets the encoder to use Constant Quantization Rate Control. It keeps the encoding at a constant quantizer and doesn't restrict to target a certain bit rate, but rather restricts to a certain quality no matter what bit rate it needs to use on each frame to keep quality constant. This value is mostly for quality encodes, set to -1 to disable this encode mode.
Level	<p>This value sets the level flag in the output bit stream (as defined by Annex A of the H.264 Standard) permissible levels include:</p> <p>1, 1.1, 1.2, 1.3, 2, 2.1, 2.2, 3, 3.1, 3.2, 4, 4.1, 4.2, 5, and 5.1</p> <p>The encoder does not support level 1b from the specification.</p>
MaxBFramesBetweenNonBFrames	This value sets the maximum number of concurrent B-frames you can use. B-frames are similar to P-frames, except they can

Setting	Explanation
	use motion prediction from future frames as well. This value can lead to significantly better efficiency in terms of compression ratio.
NoiseReduction	This value performs adaptive pseudo-dead zone noise reduction, estimates film noise based on the value set and attempts to remove the noise by dropping small details before quantization. (100 to 1000 for de-noising)
TrellisRDQuantization	<p>This value performs Trellis quantization to increase efficiency.</p> <p>0 = No quantization</p> <p>1 = Quantization on final macroblock</p> <p>2 = Always quantize</p> <hr/> <p>NOTE: This value requires CABAC.</p> <hr/>

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